



STIC Search Report

EIC 1700

STIC Database Tracking Number: 158374

TO: Dawn Garrett
Location: REM 10C79
Art Unit : 1774
July 15, 2005

Case Serial Number: 10/680066

From: Les Henderson
Location: EIC 1700
REM 4B28 / 4A30
Phone: 571-272-2538

Leslie.henderson@uspto.gov

Search Notes

2004 02 09 116

Access DB# 158374

SEARCH REQUEST FORM

Scientific and Technical Information Center

Sequester's Full Name: DAWN GARRETT Examiner #: 76107 Date: 7/1/2005
 Unit: 1774 Phone Number 30 Serial Number: 10/680,066
 Mail Box and Bldg/Room Location: Rm 2079 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc., if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Organic Light Emitting Devices with Wide Gap Host Materials

Inventors (please provide full names):

XIAOFAN REN, RUSSELL HOLMES, STEPHEN FORREST, MARK THOMPSON

Earliest Priority Filing Date: 4/21/2003

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Cln Formula VI attached please search
wherein

X is Si

SCIENTIFIC REFERENCE BR
Sci & Tech Inf. Ctr.

JUL 06 REC'D

Y is phenyl

Pat. & T.M. Office

Ar¹, Ar² and Ar³ are unsubstituted phenyl

STAFF USE ONLY

Searcher: LH

Type of Search

Vendors and cost where applicable

Searcher Phone #:

NA Sequence (#)

STN \$ 524,83

Searcher Location:

AA Sequence (#)

Dialog

Date Searcher Picked Up: 7/14/05

Structure (#)

Questel/Orbit

Date Completed: 7/15/05

Bibliographic

Dr. Link

Searcher Prep & Review Time: 30

Litigation

Lexis/Nexis

Clerical Prep Time: 30

Fulltext

Sequence Systems

Online Time: 55

Patent Family

WWW/Internet

Other

Other (specify)

NOT AVAILABLE COPY

=> d his ful

(FILE 'HOME' ENTERED AT 09:51:27 ON 15 JUL 2005)

FILE 'HCAPLUS' ENTERED AT 09:51:36 ON 15 JUL 2005
E US20040209116/PN

L1 2 SEA ABB=ON PLU=ON US20040209116/PN
D L1 1-2 ALL
SEL L1 RN

FILE 'REGISTRY' ENTERED AT 09:53:28 ON 15 JUL 2005

L2 18 SEA ABB=ON PLU=ON (159-68-2/BI OR 18849-24-6/BI OR
26393-23-7/BI OR 376367-93-0/BI OR 5256-79-1/BI OR
664374-03-2/BI OR 7439-92-1/BI OR 7440-21-3/BI OR
7440-31-5/BI OR 7440-32-6/BI OR 7440-56-4/BI OR 7440-58-6
/BI OR 7440-67-7/BI OR 7782-49-2/BI OR 94928-86-6/BI OR
18856-08-1/BI OR 18920-16-6/BI OR 550378-78-4/BI)
D SCAN

FILE 'HCAPLUS' ENTERED AT 09:56:45 ON 15 JUL 2005
SEL L1 1 RN

FILE 'REGISTRY' ENTERED AT 10:00:29 ON 15 JUL 2005
D L2 1-18 RN STR

FILE 'LREGISTRY' ENTERED AT 10:05:04 ON 15 JUL 2005

L3 STR
L4 STR L3

FILE 'REGISTRY' ENTERED AT 10:10:03 ON 15 JUL 2005

L5 0 SEA SSS SAM L3
D QUE STAT

L6 0 SEA SSS SAM L4
SCR 1843

L7 SCR 1843

L8 0 SEA SSS SAM L7 AND L3
D QUE STAT
D QUE STAT L5
D QUE STAT L3
D QUE STAT L5

L9 20 SEA SSS FUL L3
D SCAN
SAV L9 GAR066/A

FILE 'HCAPLUS' ENTERED AT 10:21:49 ON 15 JUL 2005

L10 28 SEA ABB=ON PLU=ON L9

FILE 'REGISTRY' ENTERED AT 10:22:31 ON 15 JUL 2005
D QUE STAT L4

L11 0 SEA SUB=L9 SSS SAM L4

L12 13 SEA SUB=L9 SSS FUL L4
D SCAN

FILE 'HCAPLUS' ENTERED AT 10:23:44 ON 15 JUL 2005

L13 20 SEA ABB=ON PLU=ON L12
D L13 1-20 FHITSTR

L14 8 SEA ABB=ON PLU=ON L10 NOT L13

L15 QUE ABB=ON PLU=ON EL OR E(W)L OR L(W)E(W)D OR OLED OR
ELECTROLUMIN? OR ORGANOLUMIN? OR (ELECTRO OR ORGANO OR
ORG#) (2A)LUMIN? OR LIGHT?(2A)(EMIT? OR EMISSION? OR
SOURCE?)

L16 QUE ABB=ON PLU=ON (LUMINES##### OR FLUORES? OR
PHOSPHORES?)/BI,AB OR LED/IT OR PHOSPHOR# OR LUMIN?

L17 7 SEA ABB=ON PLU=ON L10 AND L15

L18 7 SEA ABB=ON PLU=ON L16 AND L10

L19 7 SEA ABB=ON PLU=ON L17 OR L18

L20 4 SEA ABB=ON PLU=ON L19 AND L13

L21 3 SEA ABB=ON PLU=ON L19 AND L14
 L22 16 SEA ABB=ON PLU=ON L13 NOT L19
 L23 5 SEA ABB=ON PLU=ON L14 NOT L19

FILE 'REGISTRY' ENTERED AT 10:32:21 ON 15 JUL 2005
 SAV L12 GAR066A/A

FILE 'HCAPLUS' ENTERED AT 10:32:58 ON 15 JUL 2005

=> d que stat 110
 L3 STR

```

  6      8
  Cb      Cb
  { 2    } 4
Cb~Si~Cb~Si~Cb
  1 { 3 } 5
  Cb      Cb
  7      9

```

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 1

GGCAT IS UNS AT 3

GGCAT IS UNS AT 5

GGCAT IS UNS AT 6

GGCAT IS UNS AT 7

GGCAT IS UNS AT 8

GGCAT IS UNS AT 9

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 9

STEREO ATTRIBUTES: NONE

L9 20 SEA FILE=REGISTRY SSS FUL L3

L10 28 SEA FILE=HCAPLUS ABB=ON PLU=ON L9

=> d que stat 113
 L3 STR

```

  6      8
  Cb      Cb
  { 2    } 4
Cb~Si~Cb~Si~Cb
  1 { 3 } 5
  Cb      Cb
  7      9

```

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 1

GGCAT IS UNS AT 3

GGCAT IS UNS AT 5

GGCAT IS UNS AT 6

GGCAT IS UNS AT 7

GGCAT IS UNS AT 8

GGCAT IS UNS AT 9

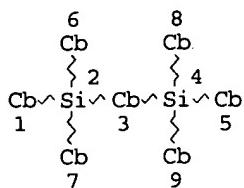
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 9

STEREO ATTRIBUTES: NONE
L4 STR



NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 1
 GGCAT IS UNS AT 3
 GGCAT IS UNS AT 5
 GGCAT IS UNS AT 6
 GGCAT IS UNS AT 7
 GGCAT IS UNS AT 8
 GGCAT IS UNS AT 9
 DEFAULT ECLEVEL IS LIMITED
 ECOUNT IS E6 C AT 1
 ECOUNT IS E6 C AT 3
 ECOUNT IS E6 C AT 5
 ECOUNT IS E6 C AT 6
 ECOUNT IS E6 C AT 7
 ECOUNT IS E6 C AT 8
 ECOUNT IS E6 C AT 9

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 9

STEREO ATTRIBUTES: NONE

L9 20 SEA FILE=REGISTRY SSS FUL L3
 L12 13 SEA FILE=REGISTRY SUB=L9 SSS FUL L4
 L13 20 SEA FILE=HCAPLUS ABB=ON PLU=ON L12

=> => d 119 1-7 cbib abs hitstr hitind

L19 ANSWER 1 OF 7 HCAPLUS COPYRIGHT 2005 ACS on STN
 2004:878009 Document No. 141:372557 Organiclight
 emitting devices with wide gap host materials. Ren,
 Xiaofan; Holmes, Russell; Forrest, Stephen; Thompson, Mark E. (USA).
 U.S. Pat. Appl. Publ. US 2004209116 A1 20041021, 58 pp.,
 Cont.-in-part of U.S. Ser. No. 420,430. (English). CODEN: USXXCO.
 APPLICATION: US 2003-680066 (20031006). PRIORITY: US 2003-420430
 20030421.

AB Organic light-emitting devices having an emissive layer comprising a host material and a phosphorescent emissive material are described in which the host has a band gap ≥ 3.2 eV and a triplet energy ≥ 3.0 eV, and is selected from materials described by the general formula Y-[X(Ar1)(Ar2)(Ar3)]n (X = independently selected Si, Ge, Sn, Pb, Se, Ti, Zr, and Hf; Y = Ph, alkyl, cycloalkyl, and a group of the formula Ar'-A-Ar"; Ar' and Ar" = independently selected aromatic groups; A = alkyl, cycloalkyl, -O-, or Si(R')(R"); R' and R" = independently selected Ph or alkyl; each Ar1-3 = independently selected alkyl or aromatic groups which may be independently substituted with ≥ 1 alkyl, alkenyl, alkoxy, Ph, aralkyl, halogen, NH, NHR, NR, SiR, and CN, and, addnl. or alternatively, ≥ 1 adjacent Ar1-3 may be linked together by a covalent bond, -O-, -CH-, -CHR-, -CR-, -NH- and -NR-; each R = alkyl, alkenyl, aryl, and aralkyl; and n = an integer between 2 up to the maximum number of

Application

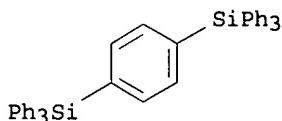
sites on Y that can accept a substituent). The devices may also be provided with charge balancing layers.

IT 18856-08-1 18920-16-6

RL: DEV (Device component use); USES (Uses)
 (organic light-emitting devices with emitting
 layers using wide gap host materials and phosphorescent
 emissive materials)

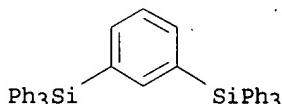
RN 18856-08-1 HCAPLUS

CN Silane, 1,4-phenylenebis[triphenyl- (9CI) (CA INDEX NAME)



RN 18920-16-6 HCAPLUS

CN Silane, 1,3-phenylenebis[triphenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

INCL 428690000; 428917000; 313504000; 313506000; 257040000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST Section cross-reference(s): 29, 76

IT org light emitting device wide gap host
 phosphorescent emitter

IT Electroluminescent devices

(organic; organic light-emitting devices with
 emitting layers using wide gap host materials and
 phosphorescent emissive materials)

IT 550378-78-4

RL: DEV (Device component use); USES (Uses)
 (charge balancing layer; organic light-emitting
 devices with emitting layers using wide gap host materials and
 phosphorescent emissive materials)

IT 159-68-2, 5,5'-Spirobi(dibenzosilole) 5256-79-1 7439-92-1D,
 Lead, multicenter compds. with organic mols. 7440-21-3D, Silicon,
 multicenter compds. with organic mols. 7440-31-5D, Tin, multicenter
 compds. with organic mols. 7440-32-6D, Titanium, multicenter compds.
 with organic mols. 7440-56-4D, Germanium, multicenter compds. with
 organic mols. 7440-58-6D, Hafnium, multicenter compds. with organic
 mols. 7440-67-7D, Zirconium, multicenter compds. with organic mols.
 7782-49-2D, Selenium, multicenter compds. with organic mols.

18849-24-6 18856-08-1 18920-16-6 26393-23-7,

9,9'-(10H,10'H)-Spirobi[9-silaanthracene]

RL: DEV (Device component use); USES (Uses)
 (organic light-emitting devices with emitting
 layers using wide gap host materials and phosphorescent
 emissive materials)

IT 94928-86-6, Tris(2-phenylpyridine)iridium 376367-93-0
 664374-03-2

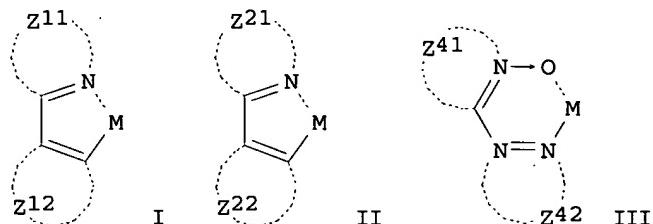
RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)

(organic light-emitting devices with emitting
 layers using wide gap host materials and phosphorescent
 emissive materials)

L19 ANSWER 2 OF 7 HCAPLUS COPYRIGHT 2005 ACS on STN
 2004:739385 Document No. 141:268179 Long-life white-emitting organic
 electroluminescent devices, displays, illumination
 apparatus, and electric appliances therewith. Fukuda, Mitsuhiro;
 Genda, Kazuo (Konica Minolta Holdings, Inc., Japan). Jpn. Kokai
 Tokkyo Koho JP 2004253298 A2 20040909, 577 pp. (Japanese). CODEN:
 JKXXAF. APPLICATION: JP 2003-43860 20030221.

X - date

GI



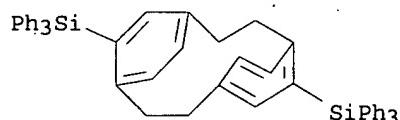
AB The devices have, in their constituent layers (e.g., emitting layers, hole- or electron-transporting layers), (i) compds. represented by X₁R₁C:CR₂X₂ [X₁, X₂ = aryl, heterocycle; R₁, R₂ = aryl, heterocyclic hydrocarbyl, cycloalkoxy (R₁ = R₂ = aryl)], R₁₁R₁₂R₁₃R₁₄R₁₅P (R₁₁-R₁₅ = monovalent substituent), Ar₂Ar₁C₆H₄(m-Ar₁Ar₂) [Ar₁ = bivalent aromatic hydrocarbylene; Ar₂ = (substituted) Ph; H atom on the benzene ring may be substituted with (cyclo)alkyl, alkoxy, or halo], Z(ArQ)_n [Q = (substituted) o-(2-pyridyl)phenyl; Z = n-valent bridging group, single bond; Ar = bivalent arylene; n = 2-8], etc., (ii) fluorescent compds. with mol. weight 500-2000 and atomic ratio F/(F + H) 0-0.9 and having fluorescent peak at ≤415 nm, (iii) polysilanes (R₂₁R₂₂Si)_n [R₂₁, R₂₂ = alkyl(oxy), aromatic group, aryloxy; n ≥ 3] or [R₃₁(Ar₃₁N₃₂R₃₃)Si]_n [R₃₁ = alkyl(oxy), aromatic group, aryloxy; R₃₂, R₃₃ = alkyl, aromatic group; Ar₃₁ = arylene; n ≥ 3], and/or (iv) fluorescent compds. satisfying atomic ratio N/C 0-0.05. The devices, having phosphorescent dopants I (Z₁₁ = aromatic azacycle; Z₁₂ = nonarom. ring, 5-membered aromatic ring, azulene; M = metal), II (Z₂₁, Z₂₂ = aromatic azacycle; M = metal), or III (Z₄₁ = azacycle; Z₄₂ = ring; M = metal) in emitting layers, are also claimed. The devices exhibit high luminescent efficiency and substantially white emission, and are suited for light source uses, especially of LCD.

IT 694534-41-3

RL: DEV (Device component use); USES (Uses)
 (long-life white-emitting organicLED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

RN 694534-41-3 HCAPLUS

CN Silane, tricyclo[8.2.2.24,7]hexadeca-4,6,10,12,13,15-hexaene-5,11-diylbis- (9CI) (CA INDEX NAME)



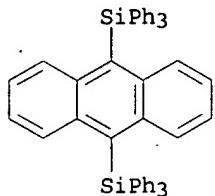
IT 676553-36-9P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
 (long-life white-emitting organicLED containing azacyclic

phosphorescent dopants and showing high
luminescent efficiency)

RN 676553-36-9 HCPLUS

CN Silane, 9,10-anthracenediylbis[triphenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; G02F001-1335; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 28, 29, 38, 74

ST white emitting electroluminescent life luminescent efficiency; phosphorescent azacyclic dopant luminescent efficiency org LED; LCD light source white emitting electrophosphorescent

IT Luminescent substances
(electroluminescent, electrophosphorescent, host-guest, long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

IT Phosphorescent substances
(electrophosphorescent; long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

IT Fluorescent substances
(fluorine- or nitrogen-containing; long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

IT Liquid crystal displays
(light sources for; long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

IT Electric apparatus
(long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

IT Organometallic compounds

Polysilanes

RL: DEV (Device component use); USES (Uses)

(long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

IT Electroluminescent devices
(white-emitting, electrophosphorescent; long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

IT 71-43-2, Benzene, uses 159-68-2, 9,9'-Spirobi[9H-9-silafluorene]	346-02-1 752-28-3 1423-70-7 17742-49-3 18822-13-4
20156-53-0 32314-41-3 33861-11-9 35088-77-8 38186-32-2	
54765-15-0 65181-79-5 122107-04-4 133942-93-5 139376-06-0	
142289-08-5 203070-80-8 213621-16-0 219917-71-2 288581-17-9	
300823-56-7 300823-57-8 301300-11-8 332350-53-5 405171-49-5	
405171-87-1 405172-39-6 453590-51-7 478262-73-6 478262-74-7	
478262-76-9 478262-77-0 478262-78-1 478262-79-2 478370-42-2	
492446-94-3 492446-97-6 497097-34-4 497097-36-6 511270-11-4	
522630-08-6 522630-12-2 522630-19-9 522630-30-4 522630-34-8	

522630-36-0	557787-50-5	557787-51-6	557787-53-8	557787-54-9
557787-56-1	557787-57-2	557787-58-3	557787-59-4	564483-87-0
567625-72-3	567625-73-4	567625-75-6	567625-78-9	567625-80-3
569674-85-7	569674-87-9	569674-89-1	569674-90-4	569674-92-6
569674-94-8	569674-95-9	569674-96-0	583040-29-3	583040-30-6
583040-31-7	583040-32-8	583040-34-0	583040-40-8	587877-29-0
587877-33-6	587877-38-1	587877-50-7	606142-46-5	606142-48-7
606142-49-8	606142-50-1	606142-51-2	606142-52-3	606142-55-6
606142-58-9	606142-59-0	606142-60-3	606142-61-4	608145-70-6
608145-80-8	608145-85-3	620630-42-4	620630-43-5	620630-45-7
620630-46-8	620630-51-5	620630-52-6	620630-53-7	620630-54-8
620630-56-0	620630-57-1	620630-58-2	620630-59-3	620630-61-7
620630-63-9	620630-64-0	620630-65-1	620630-66-2	620630-67-3
640773-62-2	640773-65-5	640773-68-8	643029-54-3	643029-58-7
643029-59-8	643029-60-1	643029-61-2	643029-63-4	643753-82-6
643758-09-2	643758-10-5	643758-15-0	644973-61-5	644973-63-7
644973-65-9	644973-67-1	645399-24-2	645399-25-3	645399-27-5
645399-33-3	645399-37-7	650606-83-0	650606-86-3	650606-88-5
650606-89-6	650606-91-0	650606-97-6	655236-05-8	655236-07-0
655236-12-7	655240-48-5	655240-49-6	663219-23-6	663219-25-8
663219-28-1	663219-29-2	663219-39-4	666839-78-7	666839-81-2
666839-86-7	666839-89-0	666839-92-5	669072-36-0	669072-52-0
669072-60-0	669072-72-4	676553-38-1	688315-81-3	688315-82-4
688315-83-5	688315-84-6	688315-86-8	688315-87-9	688315-88-0
688315-89-1	694534-34-4	694534-41-3	694534-43-5	
694534-44-6	694534-45-7	694534-46-8	694534-47-9	705941-97-5
705942-24-1	705973-76-8	705973-79-1	705973-80-4	705973-82-6
722547-84-4	722547-85-5	722547-86-6	722547-87-7	722547-88-8
722547-89-9	754231-79-3	754231-80-6	754231-82-8	754231-83-9
754231-84-0	754231-87-3	754231-88-4	754231-89-5	754231-90-8
754231-91-9	754231-92-0	754231-94-2		

RL: DEV (Device component use); USES (Uses)

(long-life white-emitting organicLED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

IT 5660-43-5P 51445-93-3P 115533-27-2P 174291-37-3P
 288297-90-5P 344564-96-1P 522630-06-4P 522630-07-5P
 557787-52-7P 567625-71-2P 567625-76-7P 567625-77-8P
 569674-88-0P 569674-97-1P 643753-84-8P 669072-95-1P
676553-36-9P 705941-83-9P 754231-93-1P 754231-95-3P
 754232-01-4P 754980-36-4P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(long-life white-emitting organicLED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

IT 604-53-5P, 1,1'-Binaphthalene 5122-94-1P 16761-23-2P
 19264-73-4P 33170-68-2P 49610-33-5P 50668-21-8P,
 3-Iodo-9-ethylcarbazole 77547-84-3P 85137-69-5P 103989-84-0P
 121073-89-0P 146232-42-0P 155886-75-2P 155886-83-2P
 263164-82-5P 288297-93-8P 288297-94-9P 288297-95-0P
 357437-74-2P 363607-69-6P 522630-41-7P 522630-42-8P
 567625-82-5P 567625-83-6P 643753-87-1P 643753-91-7P
 754232-02-5P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(long-life white-emitting organicLED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

IT 62-53-3, Aniline, reactions 67-64-1, Acetone, reactions 76-86-8,
 Triphenylchlorosilane 86-74-8, Carbazole 90-11-9,
 1-Bromonaphthalene 90-90-4, 4-Bromobenzophenone 92-66-0,
 4-Bromobiphenyl 95-54-5, 1,2-Phenylenediamine, reactions
 98-80-6, Phenylboronic acid 99-97-8, N,N-Dimethyl-p-tolylamine
 100-20-9, Terephthaloyl dichloride 106-37-6, 1,4-Dibromobenzene
 106-38-7, 4-Bromotoluene 108-36-1, 1,3-Dibromobenzene 108-94-1,

Cyclohexanone, reactions 108-98-5, Thiophenol, reactions
 110-13-4, 2,5-Hexanedione 119-61-9, Benzophenone, reactions
 119-93-7 121-43-7, Trimethoxyborane 132-32-1,
 3-Amino-9-ethylcarbazole 302-01-2, Hydrazine, reactions
 495-71-6, 1,2-Dibenzoylthane 523-27-3, 9,10-Dibromoanthracene
 583-53-9, 1,2-Dibromobenzene 619-42-1, Methyl 4-bromobenzoate
 623-27-8, 1,4-Diformylbenzene 624-92-0, Dimethyl disulfide
 626-19-7, 1,3-Benzenedicarboxaldehyde 762-04-9, Diethyl phosphite
 826-81-3, 2-Methyl-8-quinolinol 885-39-2 931-50-0,
 Cyclohexylmagnesium bromide 1003-09-4, 2-Bromothiophene
 1074-24-4, 2,5-Dibromo-p-xylene 1592-95-6, 3-BromoCarbazole
 1730-04-7, 1,8-Diodonaphthalene 1733-63-7 2586-62-1,
 1-Bromo-2-methylnaphthalene 2592-73-6, 1,1-Dibromo-2,2-
 diphenylethylene 4546-04-7 6999-03-7, 1-Bromo-4-
 trimethylsilylbenzene 10489-97-1, 1,1-Dibromocyclohexane
 38218-24-5, Indium isopropoxide 51044-13-4, 4-
 Bromobenzyltriphenylphosphonium bromide 65810-18-6,
 1,3,5-Cycloheptatriene-1-carboxaldehyde 95902-10-6,
 3-Bromobenzyltriphenylphosphonium bromide 643753-90-6
 754232-00-3
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (long-life white-emitting organicLED containing azacyclic
 phosphorescent dopants and showing high
 luminescent efficiency)

L19 ANSWER 3 OF 7 HCAPLUS COPYRIGHT 2005 ACS on STN
 2004:711217 Document No. 141:372479 Ultrahigh Energy Gap Hosts in Deep
 Blue Organic Electrophosphorescent Devices. Ren, Xiaofan; Li, Jian;
 Holmes, Russell J.; Djurovich, Peter I.; Forrest, Stephen R.;
 Thompson, Mark E. (Department of Chemistry, University of Southern
 California, Los Angeles, CA, 90089, USA). Chemistry of Materials,
 16(23), 4743-4747 (English) 2004. CODEN: CMATEX. ISSN: 0897-4756.
 Publisher: American Chemical Society.

X-date

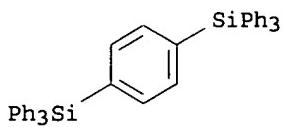
AB Four ultrahigh energy gap organosilicon compds. [diphenyldi(o-tolyl)silane (UGH1), p-bis(triphenylsilyl)benzene (UGH2), m-bis(triphenylsilyl)benzene (UGH3), and 9,9'-spirobisilaanthracene (UGH4)] were employed as host materials in the emissive layer of electrophosphorescent organic light-emitting diodes (OLEDs). The high singlet (.apprx.4.5 eV) and triplet (.apprx.3.5 eV) energies associated with these materials effectively suppress both the electron and energy transfer quenching pathways between the emissive dopant and the host material, leading to deep blue phosphorescent devices with high (.apprx.10%) external quantum efficiencies. Also, by direct charge injection from the adjacent hole and electron transport layers onto the phosphor doped into the UGH matrix, exciton formation occurs directly on the dopant, thereby eliminating exchange energy losses characteristic of guest-host energy transfer. The authors discuss the material design, and present device data for OLEDs employing UGHs. Among the 4 host materials, UGH2 and UGH3 have higher quantum efficiencies than UGH1 when used in OLEDs. Rapid device degradation was observed for the UGH4-based device due to electro- and/or photooxidn. of the diphenylmethane moiety in UGH4. In addition to showing that UGH materials can be used to fabricate efficient blue OLEDs, very high device efficiencies can be achieved in structures where the dopant transports both charge and excitons.

IT 18856-08-1, p-Bis(triphenylsilyl)benzene 18920-16-6
 , m-Bis(triphenylsilyl)benzene

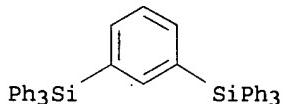
RL: DEV (Device component use); USES (Uses)
 (ultrahigh energy gap hosts in deep blue organic
 electrophosphorescent devices containing)

RN 18856-08-1 HCAPLUS

CN Silane, 1,4-phenylenebis[triphenyl- (9CI) (CA INDEX NAME)



RN 18920-16-6 HCAPLUS
 CN Silane, 1,3-phenylenebis[triphenyl- (9CI) (CA INDEX NAME)

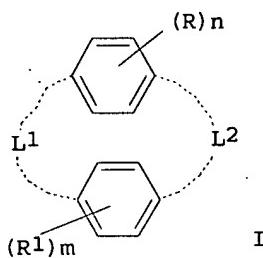


CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 72, 74, 76
 ST electrophosphorescent device organosilicon blue ultrahigh energy gap host; LED organosilicon blue ultrahigh energy gap host; silicon org deriv electrophosphorescent device blue ultrahigh gap host; luminescence silicon org deriv electrophosphorescent device blue; thermooptical luminescence silicon org deriv electrophosphorescent device blue; UV spectra silicon org deriv electrophosphorescent device blue; current voltage silicon org deriv electrophosphorescent device blue; photooxidn silicon org deriv electrophosphorescent device blue; electrochem oxidn silicon org deriv electrophosphorescent device blue; band gap silicon org deriv electrophosphorescent device blue; energy level silicon org deriv electrophosphorescent device blue
 IT Luminescence
 (UV; of organosilicon derivative for deep blue organic electrophosphorescent devices)
 IT Electroluminescent devices
 (blue-emitting; ultrahigh energy gap hosts in deep blue organic electrophosphorescent devices)
 IT Thermooptical effect
 (luminescence; of organosilicon derivative for deep blue organic electrophosphorescent devices)
 IT Band gap
 Energy level
 Luminescence
 UV and visible spectra
 (of organosilicon derivative for deep blue organic electrophosphorescent devices)
 IT 2085-33-8, Alq₃ 4733-39-5, 2,9-Dimethyl-4,7-diphenyl-1,10-phenanthroline 18856-08-1, p-Bis(triphenylsilyl)benzene 18920-16-6, m-Bis(triphenylsilyl)benzene 123847-85-8 550378-78-4, N,N'-Dicarbazolyl-3,5-benzene
 RL: DEV (Device component use); USES (Uses)
 (ultrahigh energy gap hosts in deep blue organic electrophosphorescent devices containing)

L19 ANSWER 4 OF 7 HCAPLUS COPYRIGHT 2005 ACS on STN
 2004:427863 Document No. 141:14542 Organicelectroluminescent
 devices and displays using them. Kita, Hiroshi; Yamada, Taketoshi;
 Ueda, Noriko; Fukuda, Mitsuhiro (Konica Minolta Holdings Inc.,
 Japan). Jpn. Kokai Tokkyo Koho JP 2004152527 A2 20040527, 37 pp.
 (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-314134 20021029.

GI

X date



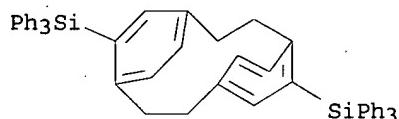
AB The devices include paracyclophanes I (R, R1 = substituent; L1, L2 = bivalent linkage; m, n = 0-4; plural R may form ring when n ≥2; plural R1 may form ring when m≥2). The devices and displays show high luminescence intensity and efficiency, and long service life.

IT 694534-41-3

RL: DEV (Device component use); USES (Uses)
(emitters; organic electroluminescent devices and displays including paracyclophanes)

RN 694534-41-3 HCAPLUS

CN Silane, tricyclo[8.2.2.24,7]hexadeca-4,6,10,12,13,15-hexaene-5,11-diylbis- (9CI) (CA INDEX NAME)



IC ICM H05B033-14
ICS C09K011-06

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

ST org electroluminescent device paracyclophane;
paracyclophane org electroluminescent display; carbazolyl
paracyclophane org electroluminescent display

IT Electroluminescent devices
(displays; organic electroluminescent devices and displays including paracyclophanes)

IT Luminescent screens
(electroluminescent; organic electroluminescent devices and displays including paracyclophanes)

IT Electroluminescent devices
(organic electroluminescent devices and displays including paracyclophanes)

IT Cyclophanes

RL: DEV (Device component use); USES (Uses)
(paracyclophanes; organic electroluminescent devices and displays including paracyclophanes)

IT 94928-86-6 343978-79-0 376367-93-0

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(dopants in emitter layers; organic electroluminescent devices and displays including paracyclophanes)

IT 694534-48-0 694534-49-1 694534-50-4 694534-51-5

RL: DEV (Device component use); USES (Uses)
(electron transporters; organic electroluminescent devices and displays including paracyclophanes)

IT 694534-38-8
 RL: DEV (Device component use); USES (Uses)
 (emitters or electron transporters; organic
 electroluminescent devices and displays including
 paracyclophanes)

IT 694534-34-4 694534-35-5 694534-36-6 694534-37-7 694534-39-9
 694534-40-2 694534-41-3 694534-42-4 694534-43-5
 694534-44-6 694534-45-7 694534-46-8 694534-47-9
 RL: DEV (Device component use); USES (Uses)
 (emitters; organic electroluminescent devices and displays
 including paracyclophanes)

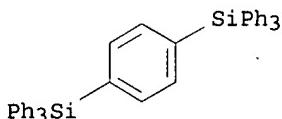
L19 ANSWER 5 OF 7 HCAPLUS COPYRIGHT 2005 ACS on STN
 2004:371815 Document No. 141:147748 Efficient organic
 electrophosphorescent whitelight-emitting
 device with a triple doped emissive layer. D'Andrade, Brian W.;
 Holmes, Russell J.; Forrest, Stephen R. (Department of Electrical
 Engineering, Princeton University, Princeton, NJ, 08544, USA).
 Advanced Materials (Weinheim, Germany), 16(7), 624-628 (English)
 2004. CODEN: ADVMEW. ISSN: 0935-9648. Publisher: Wiley-VCH Verlag
 GmbH & Co. KGaA.

X-date

AB A high efficiency white organic LED with a thin electrophosphorescent
 triple doped host and efficient exciton and charge confinement is
 demonstrated. Devices have $\eta_p = 14 \pm 1$ lm W-1 at 10 mA cm-2,
 a maximum $\eta_l = 42 \pm 4$ lm W-1 and CIE coordinates that vary from
 [0.43, 45] at 0.1 mA cm-2 to [0.38, 0.45] at 10 mA cm-2, with CRI =
 80. The device emission color is effectively controlled by varying
 dopant concns. As in the case of recently reported
 deep-blue-emitting electrophosphorescent OLEDs, high
 efficiency is obtained by direct triplet formation on the blue
 dopant by near-resonant charge transfer from nearby charge injection
 layers, avoiding exchange energy losses incurred by energy transfer
 from a singlet exciton state in the host to a triplet state in the
 phosphor.

IT 18856-08-1
 RL: DEV (Device component use); USES (Uses)
 (efficient organic electrophosphorescent whiteLED with
 triple doped emissive layer containing)

RN 18856-08-1 HCAPLUS
 CN Silane, 1,4-phenylenebis[triphenyl- (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related
 Properties)
 Section cross-reference(s): 76

ST electrophosphorescent whitelight emitting
 device triple doped emissive layer; LED white electrophosphorescent
 triple doped emissive layer

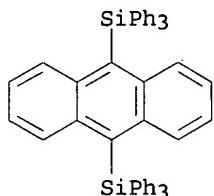
IT Electroluminescent devices
 (organic; efficient electrophosphorescent whiteLED with
 triple doped emissive layer)

IT 18856-08-1 139092-78-7 192198-85-9, 1,3,5-Tris(N-
 phenylbenzimidazol-2-yl)benzene
 RL: DEV (Device component use); USES (Uses)
 (efficient organic electrophosphorescent whiteLED with
 triple doped emissive layer containing)

IT 94928-86-6, fac-Tris(2-phenylpyridine)iridium 337526-95-1
 RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)

(efficient organic electrophosphorescent whiteLED with triple doped emissive layer containing)

- L19 ANSWER 6 OF 7 HCAPLUS COPYRIGHT 2005 ACS on STN
 2004:272156 Document No. 140:312148 Organic~~electroluminescent~~
 device and ~~electroluminescent~~ display. Kita, Hiroshi;
 Suzurizato, Yoshiyuki; Yamada, Taketoshi; Karatsu, Takashi;
 Kitamura, Akihide (Konica Minolta Holdings Inc., Japan). Jpn. Kokai
 Tokkyo Koho JP 2004103463 A2 20040402, 23 pp. (Japanese). CODEN:
 JKXXAF. APPLICATION: JP 2002-265416 20020911.
- X date
- AB The title device contains specific triphenylarylsilane in an ~~electroluminescent~~ layer. The silane compound is used a host compound or an electron transporting compound. The title device shows improved ~~electroluminescence~~ and high durability.
- IT 676553-36-9
 RL: TEM (Technical or engineered material use); USES (Uses)
 (silane compound in organic~~electroluminescent~~ device)
- RN 676553-36-9 HCAPLUS
- CN Silane, 9,10-anthracenediylbis[triphenyl- (9CI) (CA INDEX NAME)



- IC ICM H05B033-14
 ICS C09K011-06; H05B033-22; C07F007-08; C07F007-10
- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 29, 73
- ST org ~~electroluminescent~~ device display aryl silane
- IT Silanes
 RL: TEM (Technical or engineered material use); USES (Uses)
 (aryl; silane compound in organic~~electroluminescent~~ device)
- IT Electroluminescent devices
 (displays; organic~~electroluminescent~~ device and ~~electroluminescent~~ display)
- IT Luminescent screens
 (electroluminescent; organic
 electroluminescent device and ~~electroluminescent~~ display)
- IT Electroluminescent devices
 (organic ~~electroluminescent~~ device and ~~electroluminescent~~ display)
- IT 676553-36-9 676553-37-0 676553-38-1 676553-39-2
 676553-40-5 676553-41-6 676553-42-7 676553-43-8 676553-44-9
 RL: TEM (Technical or engineered material use); USES (Uses)
 (silane compound in organic~~electroluminescent~~ device)

- Publication date: November 3, 2003
- L19 ANSWER 7 OF 7 HCAPLUS COPYRIGHT 2005 ACS on STN
 2003:859655 Document No. 140:66970 Efficient, deep-blue organic electrophosphorescence by guest charge trapping. Holmes, R. J.; D'Andrade, B. W.; Forrest, S. R.; Ren, X.; Li, J.; Thompson, M. E. (Department of Electrical Engineering and the Princeton Materials Institute, Center for Photonics and Optoelectronic Materials (POEM), Princeton University, Princeton, NJ, 08544, USA). Applied Physics Letters, 83(18), 3818-3820 (English) 2003. CODEN: APPLAB. ISSN: 0003-6951. Publisher: American Institute of Physics..
- AB Efficient, deep-blue organic electrophosphorescence was demonstrated using a charge-trapping phosphorescent guest, Ir(III)

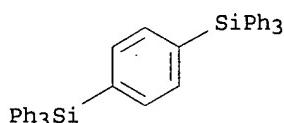
bis(4',6'-difluorophenylpyridinato)tetrakis(1-pyrazolyl)borate (FIr₆) doped in the wide-energy-gap hosts, diphenyldi(o-tolyl)silane (UGH1) and p-bis(triphenylsilyl)benzene (UGH2), where exciton formation occurs directly on the guest mols. Charge trapping on the guest is confirmed by the dependence of the drive voltage and electroluminescence spectrum on guest concentration UV photoemission spectroscopy measurements establish the relative HOMO positions of FIr₆ in UGH1 and UGH2. Peak quantum and power efficiencies of (8.8 ± 0.9)% and (11.0 ± 1.1) lm/W in UGH1 and (11.6 ± 1.2)% and (13.9 ± 1.4) lm/W in UGH2 are obtained, while the emission in both cases is from FIr₆ and is characterized by Commission Internationale de l'Eclairage coordinates of (x = 0.16, y = 0.26) in UGH2.

IT 18856-08-1

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(efficient deep-blue organic electrophosphorescence by guest charge trapping using)

RN 18856-08-1 HCPLUS

CN Silane, 1,4-phenylenebis[triphenyl- (9CI) (CA INDEX NAME)]



CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST Section cross-reference(s): 76

ST electrophosphorescence deep blue org guest charge trapping;
phosphorescence electro deep blue org guest charge trapping

IT Phosphorescence
(electro-, deep blue; efficient deep-blue organic
electrophosphorescence by guest charge trapping)

IT Luminescence

UV photoelectron spectra
(of bis(triphenylsilyl)benzene and diphenylditolylsilane and
iridium bis(difluorophenylpyridinato)tetrakis(pyrazolyl)borate)

IT 18849-24-6 18856-08-1

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(efficient deep-blue organic electrophosphorescence by guest charge trapping using)

>= >= d 122 1-16 cbib abs hitstr hitind

L22 ANSWER 1 OF 16 HCPLUS COPYRIGHT 2005 ACS on STN

1995:408011 Document No. 122:293462 Novel organosilane crosslinking agents for powder coatings. Thames, S. F.; Panjnani, K. G.; Pace, S. D.; Blanton, M. D.; Cumberland, B. R. (Univ. South. Mississippi, Hattiesburg, MS, 39406-0076, USA). Journal of Coatings Technology, 67(841), 39-45 (English) 1995. CODEN: JCTEDL. ISSN: 0361-8773.

Publisher: Federation of Societies for Coatings Technology.

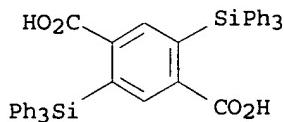
AB Organosilanedicarboxylic acids have been substituted for a portion of the carboxyl-terminated polyesters in conventional epoxy-polyester powder coatings and provide improvements in a number of performance characteristics. For instance, environmental SEM studies confirm improvements in flow and leveling; the modified powders permit lower cure temps.; and chemical and weather resistance properties are improved as is their thermal stability. Adhesion and pencil hardness are essentially unchanged, but minor improvements are noted in some formulations. However, impact strength and

flexibility are lowered for most silane-containing formulations, probably a consequence of higher aromatic content in the silane diacids.

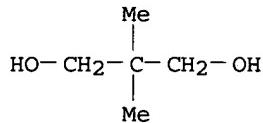
IT 163356-34-1, 2,5-Bis(triphenylsilyl)terephthalic acid-Cargill 30-3051-Epon 2002-Epon 1001F copolymer
 RL: PRP (Properties); TEM (Technical or engineered material use);
 USES (Uses)
 (organosilanedicarboxylic acid crosslinking agents for epoxy-polyester powder coatings)

RN 163356-34-1 HCAPLUS
 CN 1,4-Benzenedicarboxylic acid, 2,5-bis(triphenylsilyl)-, polymer with 1,4-benzenedicarboxylic acid, (chloromethyl)oxirane, 2,2-dimethyl-1,3-propanediol, Epon 2002 and 4,4'-(1-methylethylidene)bis[phenol] (9CI) (CA INDEX NAME)

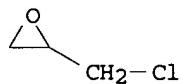
CM 1

CRN 163356-33-0
 CMF C44 H34 O4 Si2

CM 2

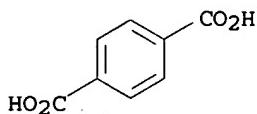
CRN 126-30-7
 CMF C5 H12 O2

CM 3

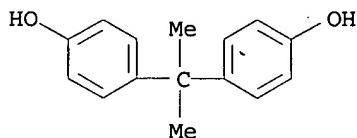
CRN 106-89-8
 CMF C3 H5 Cl O

CM 4

CRN 100-21-0
 CMF C8 H6 O4



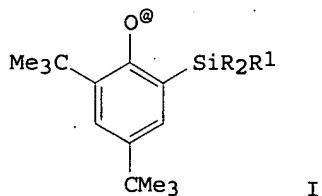
CM 5

CRN 80-05-7
CMF C15 H16 O2

CC 42-9 (Coatings, Inks, and Related Products)
 IT 163356-23-8, Cargill 30-3051-Epon 2002-Epon 1001F-2-
 trimethylsilylterephthalic acid copolymer 163356-24-9,
 2-(Dimethylphenylsilyl)terephthalic acid-Cargill 30-3051-Epon
 2002-Epon 1001F copolymer 163356-26-1, 2-
 (Diphenylmethylsilyl)terephthalic acid-Cargill 30-3051-Epon
 2002-Epon 1001F copolymer 163356-27-2, Cargill 30-3051-Epon
 2002-Epon 1001F-2-triphenylsilylterephthalic acid copolymer
 163356-28-3, 2,5-Bis(trimethylsilyl)terephthalic acid-Cargill
 30-3051-Epon 2002-Epon 1001F copolymer 163356-30-7,
 2,5-Bis(dimethylphenylsilyl)terephthalic acid-Cargill 30-3051-Epon
 2002-Epon 1001F copolymer 163356-32-9, 2,5-
 Bis(diphenylmethylsilyl)terephthalic acid-Cargill 30-3051-Epon
 2002-Epon 1001F copolymer 163356-34-1,
 2,5-Bis(triphenylsilyl)terephthalic acid-Cargill 30-3051-Epon
 2002-Epon 1001F copolymer
 RL: PRP (Properties); TEM (Technical or engineered material use);
 USES (Uses)
 (organosilanedicarboxylic acid crosslinking agents for
 epoxy-polyester powder coatings)

L22 ANSWER 2 OF 16 HCPLUS COPYRIGHT 2005 ACS on STN
 1993:169160 Document No. 118:169160 EPR spectra of sterically hindered
 silicon-containing phenoxyls. Klimov, E. S.; Muslin, D. V.;
 Lyapina, N. Sh.; Shpakov, A. V.; Okhlobystin, O. Yu. (NII Khim.
 Svobod. Radikalov, Vladikavkaz, Russia). Teoreticheskaya i
 Eksperimental'naya Khimiya, 28(1), 67-72 (Russian) 1992. CODEN:
 TEKHA4. ISSN: 0497-2627.

GI



AB ESR spectral parameters for title compds. I ($\text{R} = \text{R}^1 = \text{Me}$, Et; $\text{R} = \text{Me}$, $\text{R}^1 = \text{Et}$, OMe , OEt , OCHMe_2 , OCMe_3 ; $\text{R} = \text{Et}$, $\text{R}^1 = \text{Me}$) are reported:

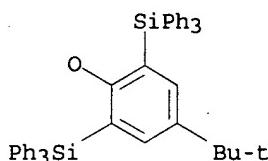
splitting consts. for unpaired electrons on meta protons on the aromatic phenoxy ring, on protons of the organosilyl groups and on magnetic silicon nuclei, and g-factor values. The stability of silicon-containing phenoxyls relative to each other was determined. The effect of a second Si-containing substituent in the ortho position and of an alkyl substituent in the para position was traced in spectra of 2,6-bis(triphenylsilyl)-4-tert-butylphenoxy and 2,6-bis(trimethylsilyl)-4-ethylphenoxy radicals. Stability of the arooxyls is determined mostly by steric screening of the radical center responsible for dimerization-rearrangement reactions.

IT 145249-90-7P

RL: PREP (Preparation)
(formation and ESR of)

RN 145249-90-7 HCPLUS

CN Phenoxy, 4-(1,1-dimethylethyl)-2,6-bis(triphenylsilyl)- (9CI) (CA INDEX NAME)



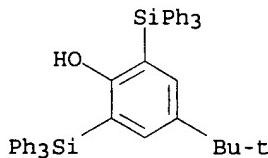
IT 91666-25-0P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
RACT (Reactant or reagent)

(preparation and oxidation of, phenoxy radical by)

RN 91666-25-0 HCPLUS

CN Phenol, 4-(1,1-dimethylethyl)-2,6-bis(triphenylsilyl)- (9CI) (CA INDEX NAME)



CC 29-6 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 22

IT 5920-86-5P 75292-30-7P 75292-31-8P 75292-32-9P 145249-86-1P

145249-87-2P 145249-88-3P 145249-89-4P 145249-90-7P

145273-37-6P

RL: PREP (Preparation)

(formation and ESR of)

IT 91666-25-0P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
RACT (Reactant or reagent)

(preparation and oxidation of, phenoxy radical by)

L22 ANSWER 3 OF 16 HCPLUS COPYRIGHT 2005 ACS on STN

1987:5154 Document No. 106:5154 Radical ions. 70. The effect of phosphorus substituents on the cyclic voltammetric reduction of aromatic π-systems. Bock, Hans; Lechner-Knobauch, Ulrike; Haenel, Peter (Inst. Anorg. Chem., Univ. Frankfurt, Frankfurt/Main, D-6000/50, Fed. Rep. Ger.). Chemische Berichte, 119(12), 3749-65 (German) 1986. CODEN: CHBEAM. ISSN: 0009-2940. OTHER SOURCES: CASREACT 106:5154.

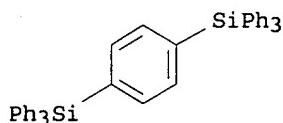
AB The half-wave reduction potentials of 23 organophosphorus compds.
R(PR12)n, R(P+R13)n, and R(PYR12) (R = benzene, biphenyl,
naphthalene, thiophene, styrene, phenylacetylene, ferrocene; R1 =

Me, Ph; Y = O, S, Se, NR; n = 1,2) are determined by cyclic voltammetry (CV) in DMF under aprotic conditions. Statistical anal. with a π -perturbation model and comparison with the CV data of other 1,4-disubstituted benzene derivs. establishes the following sequence of increasing acceptor ability of the substituents: PMe₂ < SiMe₃ < PPh₂ < P(O)Me₂ < P(S)Me₂ ≈ P(NR)Me₂ ≈ P(Se)Me₂ ≈ CN < P+Me₃ < BR₂ < P+Ph₃ ≈ NO₂.

IT 18856-08-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(electrochem. reduction of)

RN 18856-08-1 HCAPLUS

CN Silane, 1,4-phenylenebis[triphenyl- (9CI) (CA INDEX NAME)



CC 29-7 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 22, 72

IT 100-25-4 603-35-0, Triphenylphosphine, reactions 623-26-7
1179-06-2 1707-00-2, Dimethylphenylphosphine sulfide 2633-26-3
3878-45-3, Triphenylphosphine sulfide 7016-58-2 10498-57-4,
1,4-Bis(dimethylphosphino)benzene 12150-46-8 13991-08-7
18856-08-1 69220-11-7 77876-82-5 77876-83-6
77876-84-7 82340-10-1 82340-11-2 82340-12-3 82340-14-5
87319-71-9 103693-23-8 103693-24-9 103693-25-0 103693-26-1
103693-27-2 103693-28-3D, derivs.

RL: RCT (Reactant); RACT (Reactant or reagent)
(electrochem. reduction of)

L22 ANSWER 4 OF 16 HCAPLUS COPYRIGHT 2005 ACS on STN

1984:503306 Document No. 101:103306 High-performance liquid chromatography of organometallic compounds. Ermoshkin, A. E.; Makarenko, N. P.; Sakodynskii, K. I. (Inst. Chem., Gorkiy, 603137, USSR). Journal of Chromatography, 290, 377-91 (English) 1984.

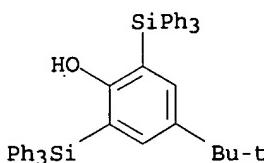
CODEN: JOCRAM. ISSN: 0021-9673.

AB High-performance liquid chromatog. (HPLC) was applied to the separation and determination of organometallic compds. (OMC) of the following classes: (1) sterically hindered Si-containing phenols and some of their alkyl-substituted analogs; (2) silyl-, alkyl- and Br-substituted naphthalenes; (3) tri- and pentaphenyl derivs. of P, Sb, and Bi; and (4) ferrocenyl and cymantrenyl derivs. of Sb and Bi. Optimal separation conditions were determined and the main retention regularities on Silochrom C-80 and Silasorb 600, when using hexane containing 0-3 volume% Et₂O as the eluent, are discussed. Examples of the separation and anal. of reaction and artificial mixts. of OMC with similar structures carried out by normal-phase HPLC are given. Substituent effects and correlations with spectral frequencies of the naphthalene-(NC)2C:C(CN)2 charge-transfer complexes are also discussed.

IT 91666-25-0
RL: ANST (Analytical study); PROC (Process)
(separation of, from organometallic compds., HPLC)

RN 91666-25-0 HCAPLUS

CN Phenol, 4-(1,1-dimethylethyl)-2,6-bis(triphenylsilyl)- (9CI) (CA INDEX NAME)



CC 80-4 (Organic Analytical Chemistry)

Section cross-reference(s): 22

IT 71-43-2, analysis 88-18-6 90-11-9 91-20-3, analysis 91-57-6
 93-04-9 96-76-4 102-54-5 128-39-2 497-39-2 573-97-7
 603-33-8 603-35-0, analysis 603-36-1 607-58-9 616-55-7
 732-26-3 791-28-6 2170-05-0 2588-88-7 3401-47-6 12079-65-1
 13328-67-1 15288-53-6 16239-18-2 18033-63-1 18081-08-8
 20834-61-1 27008-35-1 27329-77-7 33307-27-6 41908-23-0
 50738-39-1 50738-43-7 53553-74-5 53553-76-7 53553-78-9
 54863-82-0 55454-56-3 55454-57-4 55454-58-5 58144-48-2
 58933-96-3 63247-81-4 67044-81-9 70508-60-0 75315-02-5
 75333-72-1 91608-07-0 91608-08-1 91608-09-2 91649-32-0
 91666-18-1 91666-19-2 91666-20-5 91666-21-6 91666-22-7
 91666-23-8 91666-24-9 91666-25-0 91666-26-1

RL: ANST (Analytical study)
 (separation of, from organometallic compds., HPLC)

L22 ANSWER 5 OF 16 HCPLUS COPYRIGHT 2005 ACS on STN

1976:5057 Document No. 84:5057 Preparation and thermal behavior of some polyarylsilanes. El-Attar, Azza A. A.; Cerny, M. (Inst. Chem. Process Fundam., Czech. Acad. Sci., Prague-Suchdol, Czech.). Collection of Czechoslovak Chemical Communications, 40(9), 2806-15 (English) 1975. CODEN: CCCCAK. ISSN: 0010-0765.

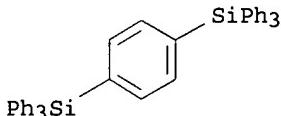
AB Bifunctional Ph3Si, Ph2(MeO)Si, Ph2(EtO)Si, and Ph2MeSi derivs. of C6H14, C6H6, Ph2, and Ph2O were prepared and their volatility and oxidation stability on heating under N or in air determined by thermogravimetric anal. (P-Ph3SiC6H4)2 and (p-Ph3SiC6H4)2O were more stable at elevated temps. than some com. stationary phases for gas-chromatog.

IT 18856-08-1P 18920-16-6P

RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation and thermal behavior of, gas chromatog. in relation to)

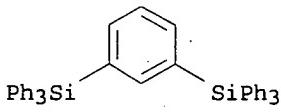
RN 18856-08-1 HCPLUS

CN Silane, 1,4-phenylenebis[triphenyl- (9CI) (CA INDEX NAME)



RN 18920-16-6 HCPLUS

CN Silane, 1,3-phenylenebis[triphenyl- (9CI) (CA INDEX NAME)



CC 29-6 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 66

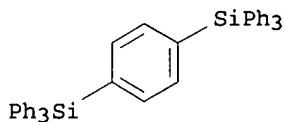
IT 18826-13-6P 18856-08-1P 18920-16-6P
 47856-57-5P 57519-23-0P 57519-24-1P 57519-25-2P 57519-26-3P

57519-27-4P 57519-28-5P 57519-29-6P 57519-30-9P 57519-31-0P

57519-32-1P

RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation and thermal behavior of, gas chromatog. in relation to)

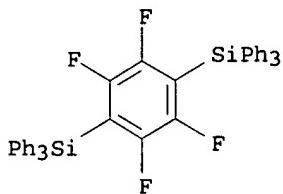
- L22 ANSWER 6 OF 16 HCAPLUS COPYRIGHT 2005 ACS on STN
 1973:28877 Document No. 78:28877 Anion radicals of phenylsilanes.
 Wan, Yieh-Ping; O'Brien, Daniel H.; Smentowski, Frank J. (Dep.
 Chem., Texas A and M Univ., College Station, TX, USA). Journal of
 the American Chemical Society, 94(22), 7680-6 (English) 1972.
 CODEN: JACSAT. ISSN: 0002-7863.
- AB The anion radicals of phenylsilanes containing both H and Me attached to Si were characterized by ESR. These anion radicals, especially ones containing Si-H bond(s), showed only limited stability and further reduction gave other paramagnetic species. Identification of the anion radicals resulting from further reduction showed that 3 modes of reaction occurred: (a) para coupling with the formation of 1,4-bis(disilyl)benzene anion radicals and then formation of tetraphenylsilane anion radical; (b) formation of biphenyl anion radical from diphenylsilanes; or (c) reaction with MeOCH₂CH₂OMe to form phenyltrimethylsilane anion radical.
- IT 40491-34-7
 RL: PRP (Properties)
 (ESR of)
- RN 40491-34-7 HCAPLUS
 CN Silane, 1,4-phenylenebis[triphenyl-, radical ion(1-) (9CI) (CA INDEX NAME)



- CC 22-4 (Physical Organic Chemistry)
 IT 34471-35-7 34519-00-1 34519-02-3 34525-05-8 34525-07-0
 34536-81-7 40491-32-5 40491-33-6 40491-34-7
 40491-35-8 40491-36-9 40491-37-0 40491-38-1
 RL: PRP (Properties)
 (ESR of)

- L22 ANSWER 7 OF 16 HCAPLUS COPYRIGHT 2005 ACS on STN
 1968:477326 Document No. 69:77326 Polyhalo-organometallic and -organometalloidal compounds. XXII. The reaction of triphenylsilyllithium with hexafluorobenzene. Fearon, F. W. Gordon; Gilman, Henry (Iowa State Univ., Ames, IA, USA). Journal of Organometallic Chemistry, 13(1), 73-80 (English) 1968. CODEN: JORCAI. ISSN: 0022-328X.

- AB The reaction of triphenylsilyllithium (I) with an excess of hexafluorobenzene at low temps. gave hexaphenyldisilane (II) and 1,4-bis(triphenylsilyl)tetrafluorobenzene instead of the expected (pentafluorophenyl)triphenylsilane. In an attempt to account for the formation of these products, the reactions of I with certain organosilicon-substituted polyfluorobenzenes were investigated and described. In contrast to the above reactions, I reacted with hexachlorobenzene via halogenmetal exchange to give pentachlorophenyllithium and II.
- IT 20083-04-9P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of)
- RN 20083-04-9 HCAPLUS
 CN Silane, (2,3,5,6-tetrafluoro-p-phenylene)bis[triphenyl- (8CI) (CA INDEX NAME)



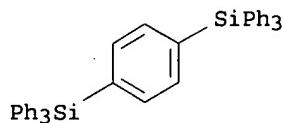
CC 29 (Organometallic and Organometalloidal Compounds)
 IT 789-25-3DP, Silane, triphenyl-, lithium complex 1450-23-3P
20083-04-9P 20083-06-1P 20083-07-2P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of)

L22 ANSWER 8 OF 16 HCPLUS COPYRIGHT 2005 ACS on STN
 1964:484352 Document No. 61:84352 Original Reference No.
 61:14700e-h,14701a Group IV organometallic chemistry. XVI.
 Synthesis of organogermanium compounds containing the p-phenylene group. Some infrared characteristics of p-phenylene derivatives of Si, Ge, Sn, and Pb. Leusink, A. J.; Noltes, J. G.; Budding, H. A.; van der Kerk, G. J. M. (TNO Utrecht, Neth.). Recueil des Travaux Chimiques des Pays-Bas, 83(8), 844-56 (English) 1964. CODEN:
 RTCPA3. ISSN: 0165-0513. OTHER SOURCES: CASREACT 61:84352.
 AB cf. CA 61, 13149e. To p-ClC₆H₄MgCl (I) [from 4.9 g. Mg and 29.4 g. p-ClC₆H₄Cl (II) in 60 ml. tetrahydrofuran (THF)] was added dropwise 31.6 g. Me₃GeBr and the whole refluxed 6 hrs. and decomposed with dilute HCl to give 17.5 g. Me₃GeC₆H₄Cl-p, b₁₂ 108-14°, n_{20D} 1.5241. To p-ClC₆H₄Li (from 0.3 mole BuLi and 0.3 mole p-ClC₆H₄Cl in 315 ml. Et₂O) was added dropwise 17.4 g. Me₂GeCl₂ (III) to give as above 17.4 g. Me₂Ge(C₆H₄Cl-p)₂ (IV), b_{0.02} 142-4°. To I (from 2.83 g. Mg, 17.0 g. II, and 60 ml. THF was added dropwise 22.1 g. III in 100 ml. THF to give p-ClC₆H₄GeMe₂Cl, b₁₂ 116-18°, n_{20D} 1.5512. To 34.7 g. III in 70 ml. THF was added dropwise p-BrMgC₆H₄MgBr (IVa) (from 15.8 g. p-BrC₆H₄Br, 4.9 g. Mg, and 100 ml. THF), the whole refluxed 2 hrs. and concentrated to dryness, the residue extracted with C₆H₆, the C₆H₆ exts. concentrated to dryness, the residue extracted with petr. ether, the petr. ether exts. concentrated to a small volume, the solid dissolved in Et₂O, and the Et₂O solution washed successively with 4N NaOH and 4N HCl to give 33% p-ClMe₂GeC₆H₄GeMe₂Cl (V), m. 97-102°. To 3.68 g. Na sand in 35 ml. dry PhMe was added dropwise 6.13 g. Me₃GeCl and 6.52 g. IV in 75 ml. PhMe (the reaction was started by heat), the whole refluxed 11 hrs. and centrifuged, and the supernatant concentrated to give 4.9 g. Me₂Ge(C₆H₄GeMe₃)₂, m. 94-6°; similarly were prepared 60% (p-Me₃GeC₆H₄GeMe₂) + C₆H₄ m. 105-7°, and 41% Me₃Ge(C₆H₄GeMe₂-p)₃Me, m. 137-9°. Equimolar amts. of III and IV refluxed 72 hrs. with Na sand, the mixture centrifuged, the supernatant concentrated, the residue stirred with C₆H₆, the mixture centrifuged again, and the C₆H₆ solution concentrated to a small volume and poured into MeOH gave 37% (-p-Me₂GeC₆H₄)_n, (n~ 12), m. 145-75°; the residues from the centrifugation treated with aqueous alc. and the mixture dried, continuously extracted with PhMe, and processed as above gave 4% (-p-Me₂GeC₆H₄)_n, m. 165-90°. Similarly was obtained (-p-GePh₂C₆H₄GeMe₂C₆H₄-)_n, m. 110-30°. By the above procedure, IVa and Ph₃GeBr in THF gave 46% p-Ph₃GeC₆H₄GePh₃, m. 349-50°, 41% p-Ph₃SnC₆H₄SnPh₃, m. 313-15°, and 43% p-Ph₃PbC₆H₄PbPh₃, m. 290-2°. I and Me₃SnCl in THF gave 59% Me₃SnC₆H₄Cl-p (VI), b₂₂ 122-6°, n_{20D} 1.5516; VI and Me₃SnCl gave 40% p-Me₃SnC₆H₄SnMe₃, m. 123-5°. The infrared spectra of these compds. were discussed.

IT 18856-08-1, Silane, p-phenylenebis[triphenyl-
 (spectrum of)]

RN 18856-08-1 HCPLUS

CN Silane, 1,4-phenylenebis[triphenyl- (9CI) (CA INDEX NAME)



CC 39 (Organometallic and Organometalloidal Compounds)

IT 1012-73-3, Tin, p-phenylenebis(trimethyl- 13183-70-5, Silane,
p-phenylenebis(trimethyl- 18856-08-1, Silane,
p-phenylenebis[triphenyl-
(spectrum of)

L22 ANSWER 9 OF 16 HCAPLUS COPYRIGHT 2005 ACS on STN

1963:482319 Document No. 59:82319 Original Reference No.

59:15298h,15299a-c Addition and substitution reactions with
triorganosilanes. Fischer, E.; Schott, G.; Petrow, A. D. (Univ.,
Moscow). Journal fuer Praktische Chemie (Leipzig), 21(3-4), 149-62
(Unavailable) 1968. CODEN: JPCEAO. ISSN: 0021-8383.

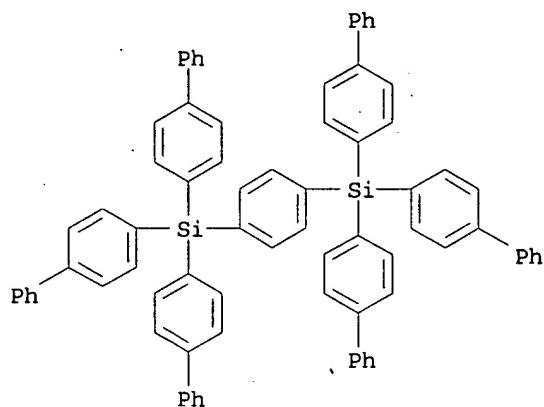
AB SiHCl₃ in ether was added to p-BrC₆H₄MgBr in ether, and the mixture
heated to 160° over 6 hrs., treated with dilute H₂SO₄, and
extracted with ether to give 17% tris(p-bromophenyl)silane (I), m.
106° (petr. ether). Tris(p-bromophenyl)bromosilane, m.
144-6° (petr. ether), was prepared by treating 1 mole I with 1
mole Br in 50 moles CCl₄. To 3.0 g. tritolylsilane and 2.5 g. allyl
bromide (II) was added 75 mg. AlCl₃, and the mixture kept 6-8 hrs. at
80°, and concentrated to give 90% tritolylbromosilane, m.
127° (petr. ether). Similarly prepared R₃SiBr were (R, %
yield, and m.p. or b.p. given): Am, 60, b₃ 156°; p-ClC₆H₄,
90, m. 122°; p-FC₆H₄, 87, m. 117°. A mixture of Et₃SiH
and II was kept 15 hrs. at 50° under ultra-violet light.
Fractionation of the products gave 24% Et₃Si(CH₂)₃Br, b₂ 96°.
Similarly prepared R₃Si(CH₂)₃Br were (R, % yield, and m.p. or b.p.
given): Pr, 32, b₂ 114°; Ph (III), 42, m. 104°. III
(5.7 g.) heated at 100-200° in the presence of 0.1 g. AlCl₃
gave Ph₃SiCH₂CH:CH₂ or Ph₃SICH:CHMe, m. 78-83°. High temperature
reaction of Ph₃SiH and CH₂:CHCH₂Cl at 630° yielded 14%
Ph₃SICH₂CH:CH₂, m. 89°. Similarly was prepared
(p-ClC₆H₄)₃SICH₂CH₂ (IV), 40%, m. 112°. Heating IV and
CH₂:CHCl at 600° yielded 36% (p-ClC₆H₄)₃SICH:CH₂, m.
95°. IV and PhCl heated at 630° gave (p-ClC₆H₄)₃SiCl,
(p-ClC₆H₄)₃SiPh, and (p-ClC₆H₄)₂PhSiC₆H₄SiPh(C₆H₄Cl-p)₂ (V), m.
258-62°. Similarly, IV and p-dichlorobenzene gave 20%
(p-ClC₆H₄)₃SiC₆H₄Si(C₆H₄Cl-p)₃ (VI), m. 263-9°. V was
obtained in 34% yield by treating 1,4-bis(phenyldichlorosilyl)-
benzene and p-bromochlorobenzene with Na in boiling PhMe. Similarly
were prepared 1,4-R₃SiC₆H₄SiR₃ (R, % yield, and m.p. given): p-ClC₆H₄,
32, 268-70°; Ph, 64, 314-16°; p-diphenyl, 22,
450°.

IT 18839-27-5, Silane, p-phenylenebis[tris(4-biphenyl)-
18848-11-8, Silane, p-phenylenebis[bis(p-chlorophenyl)phenyl-
18856-08-1, Silane, p-phenylenebis[triphenyl-

18985-56-3, Silane, p-phenylenebis[tris(p-chlorophenyl)-
(preparation of)

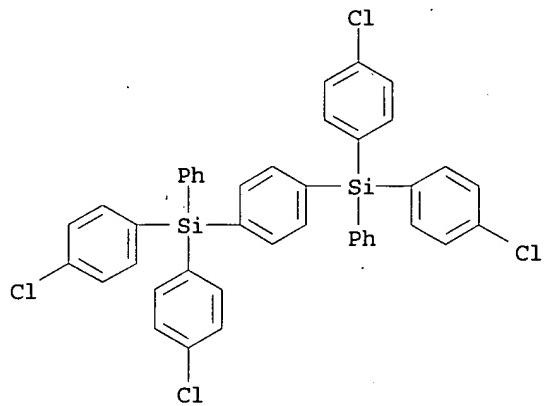
RN 18839-27-5 HCAPLUS

CN Silane, 1,1'-p-phenylenebis[tri-4-biphenyl- (8CI) (CA INDEX NAME)



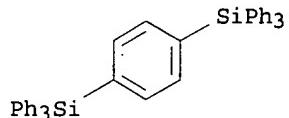
RN 18848-11-8 HCAPLUS

CN Silane, p-phenylenebis[bis(p-chlorophenyl)phenyl- (7CI, 8CI) (CA INDEX NAME)



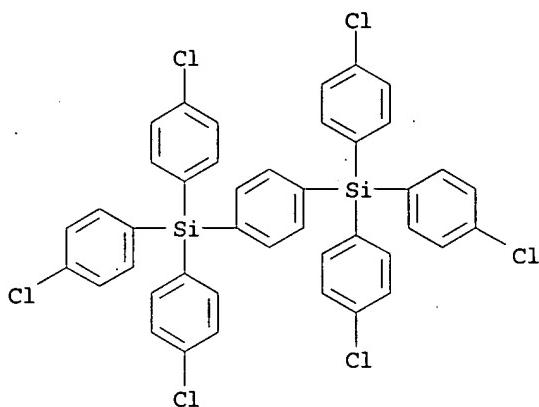
RN 18856-08-1 HCAPLUS

CN Silane, 1,4-phenylenebis[triphenyl- (9CI) (CA INDEX NAME)



RN 18985-56-3 HCAPLUS

CN Silane, p-phenylenebis[tris(p-chlorophenyl)- (6CI, 7CI, 8CI) (CA INDEX NAME)



CC 39 (Organometallic and Organometalloidal Compounds)
 IT 850-60-2, Silane, bromotris(p-fluorophenyl)- 17898-29-2, Silane,
 (3-bromopropyl)triethyl- 17907-88-9, Silane, bromotripentyl-
 18105-60-7, Silane, (3-bromopropyl)tripropyl- 18145-72-7, Silane,
 trichloro(4,4,4-trinitrobutyl)- 18147-78-9, Silane,
 trichloro(4,4-dinitrobutyl)- 18163-43-4, Silane,
 dichloro(4,4-dinitrobutyl)methyl- 18243-61-3, Silane,
 dichloromethyl(4,4,4-trinitrobutyl)- 18373-69-8, Silane,
 tris(p-bromophenyl)- 18557-72-7, Silane, bromotris(p-chlorophenyl)-
 18557-75-0, Silane, bromotris(p-bromophenyl)- 18557-76-1,
 Silane, chlorotris(p-chlorophenyl)- 18676-73-8, Silane,
 tris(p-chlorophenyl)vinyl- 18733-89-6, Silane,
 tris(p-chlorophenyl)phenyl- 18750-94-2, Silane, allyltri-p-tolyl-
 18752-21-1, Silane, allyltriphenyl- 18752-22-2, Silane,
 triphenylpropenyl- 18752-28-8, Silane, (3-bromopropyl)triphenyl-
 18772-41-3, Silane, allyltris(p-chlorophenyl)-18839-27-5,
 Silane, p-phenylenebis[tris(4-biphenyl)]-18848-11-8,
 Silane, p-phenylenebis[bis(p-chlorophenyl)phenyl]-18856-08-1
 , Silane, p-phenylenebis[triphenyl]-18985-56-3, Silane,
 p-phenylenebis[tris(p-chlorophenyl)- 100087-61-4, Silane,
 bromotritolyl-
 (preparation of)

L22 ANSWER 10 OF 16 HCAPLUS COPYRIGHT 2005 ACS on STN
 1963:40116 Document No. 58:40116 Original Reference No.
 58:6853g-h,6854a-c Reaction of alkenyl and aryl halides with
 triarylsilanes at high temperatures. Petrov, A. D.; Fisher, E.
 Zhurnal Obshchey Khimii, 32, 698-704 (Unavailable) 1962. CODEN:
 ZOKHA4. ISSN: 0044-460X.

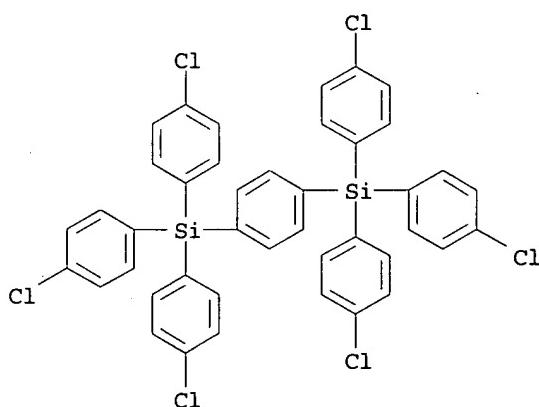
AB cf. CA 53, 1120c. p-BrC₆H₄MgBr, prepared in Et₂O at -10° 6-8
 hrs., was treated at -5° with HSiCl₃ and the mixture, after 12
 hrs. at room temperature and 6 hrs. at 160°, gave 17%
 (p-BrC₆H₄)₃SiH, m. 104°. Similarly was prepared
 (m-MeC₆H₄)₃SiH, m. 58°, and (p-FC₆H₄)₃SiH, m. 47°.
 Passage of Ph₃SiH with CH₂:CHCH₂Cl through a quartz tube at
 600° (optimum temperature) gave some Ph₃SiCl and 8.5%
 Ph₃SiCH₂CH:CH₂, m. 89°; CH₂:CHCH₂Br in this reaction gave a
 5% yield, along with 24% Ph₃SiBr. (p-ClC₆H₄)₃SiH and CH₂:CHCH₂Cl,
 best at 580°, gave 42% (p-ClC₆H₄)₃SiCH₂CH:CH₂, m.
 112°, as the sole product, although some 6% Ar₃SiCl was
 detected by titration. (m-MeC₆H₄)₃SiH and CH₂:CHCH₂Cl at
 580° gave 32% (m-MeC₆H₄)₃SiCl, m. 116-17°, and 5%
 (m-MeC₆H₄)₃SiCH₂CH:CH₂, m. 114°. Ph₃SiH and CH₂:CHCH₂Br gave
 the best yield (24%) of Ph₃SiBr at 570°, while the best yield
 of Ph₃SiCH₂CH:CH₂ (7%) was reached at 500°. Pure Ph₃SiBr m.
 114°; pure Ph₃SiCH₂CH:CH₂ m. 87-9°. (p-ClC₆H₄)₃SiH
 and CH₂:CHCH₂Br at 570° gave 10% (p-ClC₆H₄)₃SiBr, m.

122-3°, and 12% (p-ClC₆H₄)₃SiCH₂CH:CH₂, m. 112°. (p-MeC₆H₄)₃SiH and CH₂:CHCH₂Br at 570° gave 61% (p-MeC₆H₄)₃SiCH₂CH:CH₂, m. 127°, and 3.5% (p-MeC₆H₄)₃SiCH₂CH:CH₂. Ph₃SiH and CH₂:CHCl at 600° gave 18% Ph₃SiCl and 8% Ph₃SiCH:CH₂, m. 58° (Henry and Noltes, CA 54, 8282f). (p-MeC₆H₄)₃SiH and CH₂:CHCl at 600° gave 32% (p-MeC₆H₄)₃SiCl, m. 116°, and 1% (p-MeC₆H₄)₃SiCH:CH₂. (p-ClC₆H₄)₃SiH and CH₂:CHCl gave at 600° 8% (p-ClC₆H₄)₃SiCl and 36% (p-ClC₆H₄)₃SiCH:CH₂ m. 90°. Similar reactions with CH₂:CHBr gave 38-40% (p-MeC₆H₄)₃SiBr, m. 127°, 14% Ph₃SiBr, m. 119°, and 9% (p-ClC₆H₄)₃SiBr, m. 122°, resp., while the best yield of triarylvinylsilane was 16% (p-ClC₆H₄)₃SiCH₂CH:CH₂. Yield vs. temperature curves were shown. In view of enhanced reactivity of Si in arylsilanes with Cl in the ring, the following condensations were studied. PhCl and (MeC₆H₄)₃SiH, best at 630°, gave only 2% (MeC₆H₄)₃SiPh, along with 42% (MeC₆H₄)₃SiCl. Ph₂SiH and PhCl gave 6% Ph₄Si, m. 233°, and 32% Ph₃SiCl. PhCl and (p-ClC₆H₄)₃SiH gave 8% (p-ClC₆H₄)₃SiPh, m. 154°, and 14% (p-ClC₆H₄)₃SiCl, as well as a polymeric product C₄₂H₃₀Cl₁₄, m. 258-62°, which was probably the result of continued condensation such as C₆H₄(SiPhAr₂)₂. PhF and Ph₃SiH similarly gave 4% Ph₄Si and 18% Ph₃SiF, m. 63°. Reaction of p-C₆H₄Cl₂ with (p-ClC₆H₄)₃SiH gave 12% (p-ClC₆H₄)₃SiCl, m. 110-12°, 17% (p-ClC₆H₄)₄Si, m. 180°, and 20% 6H₄[Si(6H₄Cl-p)]₂, m. 263-9°. These results indicated that the X₃Si groups representing the silanes employed in this study, may be arranged in the order of electronegativity between HSiCl₃ (which gave the best yields of condensation products) and Et₃SiH (which did not form any condensation products). Since the electronegativities of the triarylsilanes used in this work were rather closely grouped, the large yield differences among the products of reaction could be attributed to other factors such as electronic shift from Si to Cl with reduced ionization of the Si-H bond

IT 18985-56-3, Silane, p-phenylenebis[tris(p-chlorophenyl)-
(preparation of)

RN 18985-56-3 HCPLUS

CN Silane, p-phenylenebis[tris(p-chlorophenyl)- (6CI, 7CI, 8CI) (CA INDEX NAME)



CC 39 (Organometallic and Organometalloidal Compounds)

IT 379-50-0, Silane, fluorotriphenyl- 1048-08-4, Silane, tetraphenyl-
1691-36-7, Silane, tris(p-fluorophenyl)- 18373-69-8, Silane,
tris(p-bromophenyl)- 18557-72-7, Silane, bromotris(p-chlorophenyl)-
18557-76-1, Silane, chlorotris(p-chlorophenyl)- 18666-68-7,
Silane, triphenylvinyl- 18676-73-8, Silane, tris(p-
chlorophenyl)vinyl- 18733-81-8, Silane, tetrakis(p-chlorophenyl)-
18733-89-6, Silane, tris(p-chlorophenyl)phenyl- 18740-66-4,

Silane, chlorotri-p-tolyl- 18742-46-6, Silane, tri-p-tolylvinyl-
 18750-93-1, Silane, allyltri-m-tolyl- 18750-94-2, Silane,
 allyltri-p-tolyl- 18752-21-1, Silane, allyltriphenyl-
 18752-29-9, Silane, bromotri-p-tolyl- 18766-22-8, Silane,
 chlorotri-m-tolyl- 18772-41-3, Silane, allyltris(p-chlorophenyl)-
18985-56-3, Silane, p-phenylenebis[tris(p-chlorophenyl)-
 27663-92-9, Silane, tri-m-tolyl- 99080-50-9, Silane,
 phenyltritolyl-
 (preparation of)

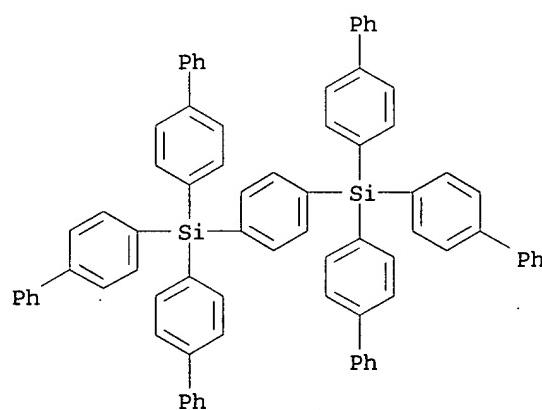
L22 ANSWER 11 OF 16 HCAPLUS COPYRIGHT 2005 ACS on STN
 1962:456368 Document No. 57:56368 Original Reference No. 57:11226d-f
 Synthesis of p-bis[phenyl bis(p-chlorophenyl)silyl],
 p-bis[tris(p-chlorophenyl)silyl], and p-bis(triphenylsilyl)benzenes.
 Petrov, A. D.; Fisher, E. (N. D. Zelinskii Inst. Org. Chem.,
 Moscow). Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya 168-9
 (Unavailable) 1962. CODEN: IASKA6. ISSN: 0002-3353.

AB cf. CA 55, 21010f. Heating Na with p-(Cl₂SiPh)₂C₆H₄ 5 hrs. at
 100° in the presence of p-C₆H₄BrCl gave 34%
 p-[(p-C₁C₅H₄)₂SiPh]C₆H₄, m. 264°, identical with that prepared
 by the pyrolytic route (cf. loc. cit.). Similarly, p-(Cl₃Si)C₆H₆
 gave 32% p-[(p-C₁C₆H₄)₂Si]C₆H₄, m. 268-70°, identical with
 the product of pyrolytic synthesis. Passage of p-C₅H₄Cl₂ and
 PhSiHCl₂ through an empty tube at 680° with 20 sec. contact
 time gave 20% p-(Cl₂SiPh)C₆H₄, m. 96°. Similarly, HSiCl₃
 and p-C₆H₄Cl₂ at 700° gave from a 2:1 reactant ratio 28%
 p-C₆H₄(SiCl₃)₂(I), m. 78°. This and PhCl with Na gave 44%
 p-C₆H₄(SiPh₃)₂, m. 314-16°. Passage of (p-PhC₆H₄)₂SiH and
 p-C₆H₄Cl₂ through a hot tube gave only 34% (p-PhC₆H₄)₃SiCl.
 However, p-PhC₆H₄Br and I with Na gave 22% p-C₆H₄[Si(C₆H₄Ph-p)₃]₂,
 did not m. 450°. Infrared spectra of the products were
 recorded.

IT 18839-27-5, Silane, p-phenylenebis[tris(4-biphenylyl)-
 18848-11-8, Silane, p-phenylenebis[bis(p-chlorophenyl)phenyl-
 18856-08-1, Silane, p-phenylenebis[triphenyl-
 18985-56-3, Silane, p-phenylenebis[tris(p-chlorophenyl)-
 (preparation of)

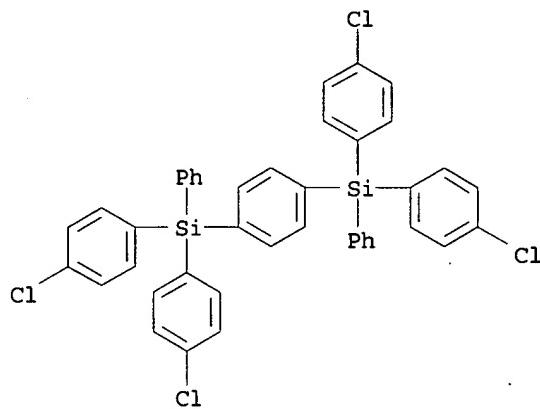
RN 18839-27-5 HCAPLUS

CN Silane, 1,1'-p-phenylenebis[tri-4-biphenylyl- (8CI) (CA INDEX NAME)

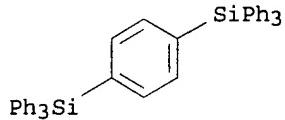


RN 18848-11-8 HCAPLUS

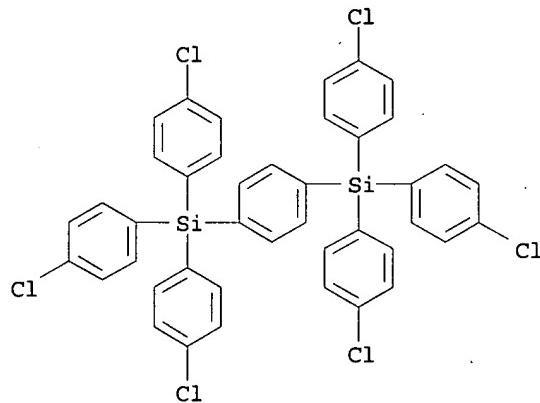
CN Silane, p-phenylenebis[bis(p-chlorophenyl)phenyl- (7CI, 8CI) (CA INDEX NAME)



RN 18856-08-1 HCAPLUS
 CN Silane, 1,4-phenylenebis[tri(p-chlorophenyl)- (9CI) (CA INDEX NAME)



RN 18985-56-3 HCAPLUS
 CN Silane, p-phenylenebis[tris(p-chlorophenyl)- (6CI, 7CI, 8CI) (CA INDEX NAME)

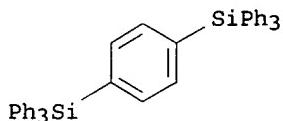


CC 33 (Organometallic and Organometalloidal Compounds)
 IT 830-46-6, Silane, p-phenylenebis[trichloro- 853-16-7, Silane,
 p-phenylenebis[dichlorophenyl- 2925-45-3, Silane,
 triethoxy(trifluorovinyl)- 18816-40-5, Silane,
 tris(4-biphenyl)chloro- 18839-27-5, Silane,
 p-phenylenebis[tris(4-biphenyl)- 18848-11-8, Silane,
 p-phenylenebis[bis(p-chlorophenyl)phenyl- 18856-08-1,
 Silane, p-phenylenebis[triphenyl- 18985-56-3, Silane,
 p-phenylenebis[tris(p-chlorophenyl)-
 (preparation of)

L22 ANSWER 12 OF 16 HCAPLUS COPYRIGHT 2005 ACS on STN
 1962:456367 Document No. 57:56367 Original Reference No. 57:11226c-d

The reduction of aromatic compounds by lithium in low-molecular weight amines. Stereochemistry of the addition of trichlorosilane to acetylenes. Factors influencing the direction of elimination in xanthate pyrolysis. Burrous, Merwyn L. (Purdue Univ., Lafayette, IN). 124 pp. Avail. Univ. Micro films (Ann Arbor, Mich.), Order No. 61-5699 From: Dissertation Abstr. 22, 4179-80 (Unavailable) 1962.

AB Unavailable
 IT 18856-08-1, Silane, p-phenylenebis[triphenyl-
 (preparation of)
 RN 18856-08-1 HCAPLUS
 CN Silane, 1,4-phenylenebis[triphenyl- (9CI) (CA INDEX NAME)



CC 33 (Organometallic and Organometalloidal Compounds)
 IT 18856-08-1, Silane, p-phenylenebis[triphenyl-
 (preparation of)

L22 ANSWER 13 OF 16 HCAPLUS COPYRIGHT 2005 ACS on STN
 1962:449397 Document No. 57:49397 Original Reference No.
 57:9871c-i,9872a-c Studies in IVth group organometallic chemistry.
 IX. Synthesis of organosilicon compounds and polymers containing the p-phenylene group. Noltes, J. G.; van der Kerk, G. J. M. (Inst. Org. Chem., Utrecht, Neth.). Recueil des Travaux Chimiques des Pays-Bas, 81, 565-77 (English) 1962. CODEN: RTCPA3. ISSN:
 0165-0513.
 AB cf. CA 56, 15530i. A solution of p-ClC₆H₄MgCl, from 162 g. p-C₆H₄C₁₂ and 26.5 g. Mg in 300 ml. tetrahydrofuran (I), was added slowly with vigorous stirring to 150 g. Me₂SiCl₂ (II) in 200 ml. I (all reactions carried out under dry N₂), the mixture heated 2 hrs. at 50°, the solvent evaporated, and 300 ml. petr. ether added to the vigorously stirred residue. The mixture was filtered, the solvent evaporated, and the residue fractionated to give 30% p-ClC₆H₄SiMe₂C₁ (III), b₁₈ 106-9°, n_{20D} 1.5232. p-C₆H₄Br₂ (IV) (88 g.) in 250 ml. Et₂O was added, over 5 hrs. with vigorous stirring, to 142 g. II, 27 g. Mg, a crystal of iodine, and 75 ml. Et₂O, the mixture refluxed 3 hrs., cooled, filtered, concentrated, again filtered, the solvent evaporated, and the residue fractionated to give 44% p-C₆H₄(SiMe₂C₁)₂ (V), m. 85-8°, b_{0.3} 116-22°, b₁₉ 150-5°. p-ClC₆H₄SiMe₃ (VI) (18.5 g.) in 60 ml. I was refluxed 9 hrs. with excess Mg, 18.5 g. III in 35 ml. I added dropwise, the mixture refluxed 3 hrs., then decomposed with aqueous NH₄Cl, and worked up through Et₂O to give 52% R' (p-C₆H₄SiR''₂)nR''' (VII) (R' = Cl, R'' = R''' = Me, n = 2) (VIII), b_{0.1} 129-32°, n_{20D} 1.5507. The Grignard reagent from 59 g. IV and 12 g. Mg in 350 ml. I was added over 3 hrs. to 157 g. Ph₂SiCl₂ (IX) in 125 ml. I at 50°, I evaporated, the residue dissolved in C₆H₆, the solution filtered, and evaporated to dryness to give a product which was refluxed 1 hr. with 1 l. EtOH. The solution, concentrated and cooled to 0°, gave 42% compound, m. 150-5°, repeated crystallization of which gave 17% p-C₆H₄(SiPh₂OEt)₂ (X), m. 158-60° (EtOH). Anhydrous HCl passed into X in Et₂O precipitated p-C₆H₄(SiPh₂C₁)₂ (XI), m. 195-8° (ligroine). V (7.8 g.) in 30 ml. PhMe was stirred into 45 ml. PhMe containing 10.9 g. VI and 3.5 g. Na sand, at such a rate as to maintain reflux, the mixture refluxed 6 hrs., centrifuged, the precipitate extracted once with boiling PhMe, and the solvent removed to give 37% VII (R' = SiMe₃, R'' = R''' = Me, n = 3), m. 131-3° (EtOH). Similarly were prepared (reactants, product, m.p., recrystg. solvent, and % yield given): Me₃SiCl and VI (with Mg and I replacing Na and PhMe),

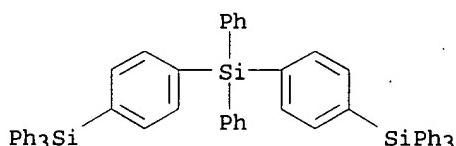
p-C₆H₄(SiMe₃)₂, 94-6°, EtOH, 60; II and VI,
 Me₂Si(p-C₆H₄SiMe₃)₂, 78-81°, PrOH, 48; II and VIII, VII (R' = SiMe₃, R'' = R''' = Me, n = 4), 170-3°, Me₂CO, 53; V and VIII, VII (R' = SiMe₃, R'' = R''' = Me, n = 5) (XII), 187-91°, PhMe, 47; V and p-ClC₆H₄SiPh₃ (XIII), VII (R' = SiPh₃, R'' = Me, R''' = p-C₆H₄SiPh₃, n = 2), 220-2°, Me₂NCHO, 48. Ph₃SiBr (8.47 g.), 9.27 g. XIII, and 1.2 g. Na sand in 75 ml. PhMe was refluxed 10 hrs. after spontaneous heating ceased. The cooled mixture was centrifuged, the precipitate washed with aqueous EtOH, and continuously extracted with Me₂NCHO. The extract deposited 33% p-C₆H₄(SiPh₃)₂, m. 337-41°. Similarly Ph₂SiCl₂ and XIII gave 45% Ph₂Si(p-C₆H₄SiPh₃)₂, m. 3658° (xylene). A p-chlorophenylsilane in PhMe was added dropwise to a vigorously stirred mixture of 1 molar equivalent of a chlorosilane and excess Na sand in PhMe, the mixture refluxed 4-6 days, then centrifuged. The supernatant liquor was poured into MeOH, the precipitate redissolved in PhMe, and MeOH added portionwise to precipitate fraction A. The precipitate from centrifugation was washed with aqueous EtOH, dried, and continuously extracted with PhMe to give a solution from which MeOH precipitated fraction B. Thus were prepared (p-chlorophenyl)silane, chlorosilane, fraction containing polymer, poly-p-phenylenesilane, m.p., % yield, and number-average mol. weight given): Me₂Si(p-C₆H₄Cl)₂ (XIV), II, B, (SiMe₂C₆H₄)₂₈ (XV), 200-25°, 15, 3800; XIV, II, A, (SiMe₂C₆H₄)₁₃, 155-210°, 54, 1800; III, III, B, (SiMe₂C₆H₄)₁₆, 190-210°, 17, 2100; III, III, A, (SiMe₂C₆H₄)₁₃ (XVI), 170-85°, 40, 1800; Ph₂Si(p-C₆H₄Cl)₂ (XVII), II, not precipitated by MeOH, (SiMe₂-C₆H₄SiPh₂C₆H₄)₆ (XVIII), 155-70°, 76, 2400; XVI, V, B, (SiMe₂C₆H₄SiMe₂C₆H₄SiPh₂C₆H₄)₆ (XIX), 190-210°, 14, 2900; XVII, V, A, (SiMe₂C₆H₄SiMe₂C₆H₄SiPh₂C₆H₄)₅, 175-95°, 34, 2800; XIV, XI, B, (SiMe₂C₆H₄SiPh₂C₆H₄SiPh₂C₆H₄)₄ (XX), 215-45°, 18, 2600; XIV, XI, A, (SiMe₂C₆H₄SiPh₂C₆H₄SiPh₂C₆H₄)_n, 135-55°, 22, --; XVII, XI, residue insol. in PhMe, (SiPh₂C₆H₄), (XXI), >360°, 52, --; XVII, XI, B, (SiPh₂C₆H₄)₈ (XXII), 235-60°, 12, 2100. The low mol. wts. of the polymers are due to chain-termination by the solvent. Thermogravimetric data are given for XII, XV, XVI, XVIII-XXII. 17 references.

IT 18827-38-8, Silane, diphenylbis[p-(triphenylsilyl)phenyl]-
 18856-08-1, Silane, p-phenylenebis[triphenyl-

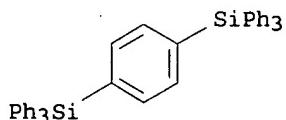
(preparation of)

RN 18827-38-8 HCPLUS

CN Silane, diphenylbis[p-(triphenylsilyl)phenyl]- (7CI, 8CI) (CA INDEX NAME)



RN 18856-08-1 HCPLUS
 CN Silane, 1,4-phenylenebis[triphenyl- (9CI) (CA INDEX NAME)



CC 33 (Organometallic and Organometalloidal Compounds)
 IT 825-92-3, Silane, chloro(p-chlorophenyl)dimethyl- 1078-97-3,

Silane, p-phenylenebis[chlorodimethyl- 10466-89-4, Silane,
 p-phenylenebis[chlorodiphenyl- 13183-70-5, Silane,
 p-phenylenebis(trimethyl- 14814-13-2, Silane, p-
 phenylenebis[ethoxydiphenyl- 18057-52-8, Silane,
 1-(p-chlorophenyl)-1,1',1'',1'-pentamethyl-1,1'-p-phenylenebis-
 18589-10-1, Silane, dimethylbis[p-(trimethylsilyl)phenyl]-
 18817-60-2, Silane, bis[p-[dimethyl[p-(trimethylsilyl)phenyl]silyl]p-
 henyl]dimethyl- 18825-51-9, Silane, p-phenylenebis[dimethyl[p-
 (triphenylsilyl)phenyl]-18827-38-8, Silane,
 diphenylbis[p-(triphenylsilyl)phenyl]- 18828-76-7, Silane,
 p-phenylenebis[[p-[dimethyl[p-(trimethylsilyl)phenyl]silyl]phenyl]di-
 methyl- 18848-18-5, Silane, p-phenylenebis[dimethyl[p-
 (trimethylsilyl)phenyl]-18856-08-1, Silane,
 p-phenylenebis[triphenyl-
 (preparation of)

L22 ANSWER 14 OF 16 HCPLUS COPYRIGHT 2005 ACS on STN

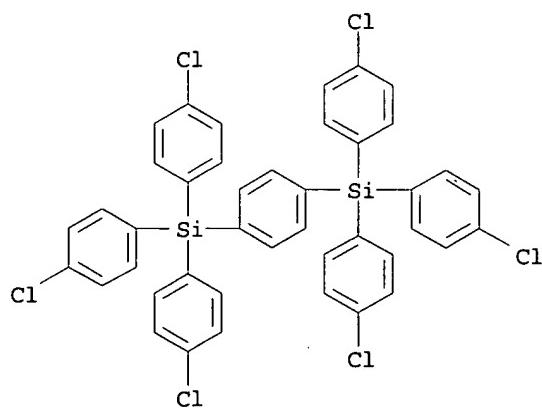
1961:111860 Document No. 55:111860 Original Reference No. 55:21010f-h
 High temperature reaction of triarylsilanes with allyl chloride, and
 chloro- and p-dichlorobenzenes. Fisher, E.; Petrov, A. D. (D. I.
 Mendeleev Chem.-Technol. Inst., Moscow). Doklady Akademii Nauk
 SSSR, 138, 136-8 (Unavailable) 1961. CODEN: DANKAS. ISSN:
 0002-3264.

AB cf. Ponomarenko and Egorov, CA 54, 22005a. Heating CH₂:CHCH₂Cl with
 (p-ClC₆H₄)₃SiH (best at 580°) gave 42% (p-
 ClC₆H₄)₃SiCH₂CH:CH₂, m. 112°, and 6% (p-ClC₆H₄)₃SiCl.
 Similarly, at 580° (p-MeC₆H₄)₃SiH gave 32% (p-MeC₆H₄)₃SiCl
 (I), m. 116-17°, and 5% (p-MeC₆H₄)₃SiCH₂CH:CH₂, m.
 114°. (p-MeC₆H₄)₃SiH and PhCl at 630° gave 2%
 (p-MeC₆H₄)₃SiPh and 42% I. PhCl and (p-ClC₆H₄)₃SiH gave 14%
 (p-ClC₆H₄)₃SiCl and 19% (p-ClC₆H₄)₃SiPh. The last reaction also
 gave an unidentified substance, m. 258-62°, Si₂C₁₄C₄₂H₂₀,
 possibly a condensation product. Similarly, (p-ClC₆H₄)₃SiH and
 p-C₆H₄Cl₂ gave 12% (p-ClC₆H₄)₃SiCl and 17% (p-ClC₆H₄)₄Si, m.
 180°; much HCl and polymeric product, m. 263-9°, was
 isolated; the polymer appeared to be mainly bis[tri-(p-
 chlorophenyl)silyl]benzene.

IT 18985-56-3, Silane, p-phenylenebis[tris(p-chlorophenyl)-
 (preparation of)

RN 18985-56-3 HCPLUS

CN Silane, p-phenylenebis[tris(p-chlorophenyl)- (6CI, 7CI, 8CI) (CA
 INDEX NAME)



CC 10E (Organic Chemistry: Benzene Derivatives)

IT 18557-76-1, Silane, chlorotris(p-chlorophenyl)- 18733-81-8,
 Silane, tetrakis(p-chlorophenyl)- 18733-89-6, Silane,
 tris(p-chlorophenyl)phenyl- 18740-66-4, Silane, chlorotri-p-tolyl-

18750-94-2, Silane, allyltri-p-tolyl- 18772-41-3, Silane,
 allyltrim(p-chlorophenyl)- 18870-40-1, Silane, phenyltri-p-tolyl-
18985-56-3, Silane, p-phenylenebis[tris(p-chlorophenyl)]-
 (preparation of)

L22 ANSWER 15 OF 16 HCAPLUS COPYRIGHT 2005 ACS on STN
 1961:43307 Document No. 55:43307 Original Reference No.

55:8424g-i,8425a-h o-Phenylene silicon derivatives.

Dihydrosilanthrene and related compounds. Gilman, Henry; Zuech, Ernest A. (Iowa State Univ., Ames). Journal of the American Chemical Society, 82, 3605-8 (Unavailable) 1960. CODEN: JACSAT.
 ISSN: 0002-7863.

GI For diagram(s), see printed CA Issue.

AB cf. CA 54, 9947i. During a successful effort to prepare I (5,5,10,10-tetrasubstituted-5,10-dihydrosilanthrenes), o-C₆H₄Li₂ (II) was treated with Ph₂SiH₂ (III), MePh₂SiCl (IV), Ph₂SiCl₂ (V), (PhCH₂)₂SiCl₂ (VI), o-C₆H₄(SiHPh₂)₂ (VII), and Ph₃SiCl (VIII). The reactions of VII with MeLi and PhLi were also investigated. Acid titration of Et₂O solns. of II that had been filtered through glass wool indicated over 100% base present, but acceptable values were obtained if solns. were first filtered through a sintered glass filter. A solution of II, prepared (Wittig and Bickelhaupt, CA 52, 18307b) by shaking 8.28 g. o-phenylene-mercury (IX) and 6 g. Li wire in 100 ml. dry Et₂O 4 days was added during 30 min. to 5.52 g. III in 50 ml. Et₂O in an ice-bath, the mixture stirred 24 hrs. at room temperature, hydrolyzed with 100 ml. 5% HCl, Et₂O added, the mixture filtered, and the solid crystallized to give 1.64 g. VII, m.

174-6° (EtOAc); from the hydrolysis filtrate was isolated 0.77 g. addnl. VII, m. 174-6° (total yield, 36%); anal.

sample m. 174.5-6.0°. When a solution of II (from 10 g. IX and 7 g. Li) was added to 14.7 g. III in 100 ml. Et₂O and after 16 hrs. the mixture hydrolyzed with dilute H₂SO₄, 23% VII was obtained.

Treatment of 0.06 mole III with II in a 0.024 mole solution that had been filtered through a sintered glass filter yielded 38% VII. II (0.023 mole) filtered through a glass filter, added to 0.023 mole III in Et₂O, the mixture stirred 17 hrs., 50 ml. PhMe added, Et₂O removed by distillation, the suspension refluxed 3 hrs. (Color Test I neg.), hydrolyzed, and the Et₂O layer evaporated gave an oil, which upon chromatography on Al₂O₃ yielded 0.1 g. Ph₃SiH, 2.7% Ph₄Si, m.

234-7° (EtOAc), 31% VII, m. 175-7° (EtOAc), and 9.1% o-Ph₃SiC₆H₄(SiHPh₂) (X), m. 214-17° (EtOAc). A solution of II, prepared from 10 g. IX, was added to 17.4 g. IV in Et₂O, refluxed 18 hrs. (Color Test I pos.), 80 ml. PhMe added, Et₂O removed by distillation, the mixture refluxed 24 hrs., and hydrolyzed to give an oil, which when extracted with petr. ether and recrystd. from petr. ether yielded 29% (MePh₂Si)₂ (mixed m.p. and infrared comparison); concentration of the petr. ether extract and recrystn. of the precipitate gave 7.7% o-C₆H₄(SiPh₂Me)₂ (XI), m. 173-4° (petr. ether). MeLi (0.007 mole) added to 1 g. VII in 50 ml. Et₂O, the mixture refluxed 18 hrs., treated with 0.003 mole addnl. MeLi, 40 ml. PhMe added, Et₂O removed by distillation, and the mixture refluxed 1 hr. gave 0.82 g. solid, m. 125-52°, from which 17% XI, m. 171-3°, was obtained by 6 recrystns. from petr. ether (purification was difficult owing to the presence of SiH-containing compds.). II (0.028 mole) in Et₂O was added to 7.1 g. V in 25 ml. Et₂O, the mixture stirred 18 hrs., 50 ml. PhMe added, Et₂O removed by distillation, the mixture refluxed 6 hrs. (Color Test I neg.), hydrolyzed with dilute H₂SO₄, the H₂O layer extracted with Et₂O, the combined Et₂O layers evaporated, and the residue chromatographed on Al₂O₃ to give 0.6% Ph₄Si, m. 234-7°

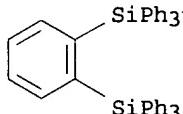
(EtOAc), and 10% I (R = Ph), m. 234-6° (EtOAc), b. 540° (slight decomposition). II, prepared from 4.15 g. IX, was added to 4.42 g. VII in 100 ml. dry PhMe, Et₂O removed by distillation, the mixture refluxed 5 hrs., hydrolyzed with ice and dilute H₂SO₄, Et₂O added, and the mixture worked up as usual to give an oil, which upon crystallization from EtOAc yielded 15% X, m. 214-16°. From 0.012 mole II and 0.012 mole VII was obtained 23% X plus 38% recovered

VII. A solution of 7.3 g. VI in 75 ml. Et₂O in an ice-bath was treated with 0.026 mole II in Et₂O, the mixture stirred 16 hrs. at room temperature (Color Test I pos.), 30 ml. PhMe added, Et₂O removed by distillation, the mixture refluxed 4 hrs. (Color Test I neg.), and hydrolyzed to give 2.8% I (R = PhCH₂), m. 174.5-6.0 (10:1 petr. ether-C₆H₆), b. 510° (decomposition). PhLi (0.015 mole) in Et₂O added to 2.21 g. VII in 100 ml. Et₂O, the mixture refluxed 24 hrs. and hydrolyzed yielded 24% crude X and 31% o-C₆H₄(SiPh₃)₂ (XII), m. 257.5-9.0° (EtOAc). X (1.35 g.) in 50 ml. dry PhMe was treated with 0.01 mole PhLi in Et₂O, the Et₂O removed by distillation, the mixture refluxed 16 hrs., an addnl. 0.003 mole PhLi added, the mixture refluxed 8 hrs. and hydrolyzed, to give 73% XII, m. 256-9° (EtOAc). A solution of 8.23 g. VIII in 100 ml. Et₂O was treated with 0.014 mole II in Et₂O, 75 ml. PhMe added, the Et₂O distilled, and the mixture refluxed 24 hrs. to give 14% (Ph₃)₂O and 21% Ph₃SiOH. Attempts to make mol. models of XI and XII indicated considerable strain.

IT 18920-15-5, Silane, o-phenylenebis[triphenyl-
(preparation of)

RN 18920-15-5 HCPLUS

CN Silane, o-phenylenebis[triphenyl- (6CI, 8CI) (CA INDEX NAME)



CC 10G (Organic Chemistry: Heterocyclic Compounds)
IT 789-25-3, Silane, triphenyl- 791-31-1, Silanol, triphenyl-
1048-08-4, Silane, tetraphenyl- 1172-76-5, Disilane,
1,2-dimethyl-1,1,2,2-tetraphenyl- 1829-40-9, Disiloxane,
hexaphenyl- 18815-90-2, Silane, pentaphenyl-o-phenylenebis-
18817-06-6, Silanthrene, 5,10-dihydro-5,5,10,10-tetraphenyl-
18839-04-8, Silane, o-phenylenebis[methyldiphenyl- 18845-58-4,
Silanthrene, 5,5,10,10-tetrabenzyl-5,10-dihydro- 18881-83-9,
Silane, o-phenylenebis[diphenyl- 18920-15-5, Silane,
o-phenylenebis[triphenyl-
(preparation of)

L22 ANSWER 16 OF 16 HCPLUS COPYRIGHT 2005 ACS on STN

1959:56212 Document No. 53:56212 Original Reference No.

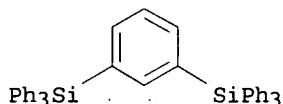
53:10102g-i,10103a-i,10104a-c Cleavage of diphenyl sulfone and diphenyl sulfide by triphenylsilyllithium. Wittenberg, Dietmar; Wu, T. C.; Gilman, Henry (Iowa State Coll., Ames). Journal of Organic Chemistry, 23, 1898-1903 (Unavailable) 1958. CODEN: JOCEAH. ISSN: 0022-3263.

AB Ph₃SiLi (I) was found to cleave Ph₂SO₂ (II) with the formation of PhLi (III) and triphenyl(phenylsulfonyl) silane (IV), which in a 2nd step interact to give Ph₄Si (V) and Li benzenesulfinate (VI). In addition, a variety of other products was obtained when excess I was used. The reaction of I with Ph₂S (VII) gave, in addition to Ph₆Si₂ (VIII), III and Li thiophenolate (IX) as the cleavage products. I (0.058 mole) in tetrahydrofuran added to 8.25 g. II accompanied by external cooling, and after hydrolysis and addition of some ether 4.4 g. V, m. 232-4°, which when dissolved in C₆H₆ left 0.13 g. insol. material, which was shown to be impure m-phenylenebis(triphenylsilane) (IXa), m. 345-9°. The layers of the filtrate separated, the organic layer washed, dried, and evaporated gave 2 g. V. When C₆H₆ was added to the concd. mother liquor 0.18 g. precipitate formed, m. 280-320°, which was not further identified. Addition of ligroine gave 2.9 g. triphenylsilanol (X), m. 151-3°, and a small amount of hexaphenyldisiloxane (Xa), m. 225-8°. The combined aqueous layers gave after acidification an

orange precipitate with FeCl_3 solution which was insol. in dilute HCl , which indicated the presence of benzenesulfinic acid which came from VI. A sample of the aqueous solution refluxed 0.5 hr. with an equal volume of alc. HgCl_2 gave a small amount of PhHgCl , m. $151-2^\circ$. Second experiment: I (0.076 mole) in tetrahydrofuran treated 72 hrs. with 8.25 g. II and hydrolyzed gave 4.85 g. IXa, identical with a specimen obtained from m-phenylenebis(trichlorosilane) and III. The C_6H_6 solution gave on concentration a small amount of impure VIII, m. $856-63^\circ$, and further concentration gave 3.5 g. V. The layers of the 1st filtrate separated, some Et_2O added, the organic layer washed, dried, and distilled gave 1.1 g. Xa. From the filtrate 1.4 g. X was obtained. The aqueous layer of the run showed the same properties as in the 1st experiment. The presence of benzenesulfinic acid (XI) was estimated by reactions with FeCl_3 and HgCl_2 . Third experiment: I (0.048 mole) in tetrahydrofuran added during 15 min. at room temperature to 5.2 g. II, stirred 1 hr., poured on Dry Ice, extracted with Et_2O , and worked up gave 1.4 g. IXa and 0.25 g. VIII. The 2 layers of the first filtrate separated, the organic layer extracted with dilute NaOH , then with H_2O , dried, the solvents distilled and the residue chromatographed gave 0.45 g. V and 3.1% Xa. The ligroine-alc. filtrate concentrated and treated with ligroine gave 3.95 g. X and no crystalline material was obtained from the mother liquor but the infrared spectrum indicated the presence of Ph_3SiH with further evidence being the evolution of H gas on treatment with KOH in alc. The alkaline aqueous layer refluxed a few min., and the solid removed gave 2.1 g. 4-(triphenylsilyl)benzoic acid, m. $213-14^\circ$ (AcOH and cyclohexane). The alkaline aqueous filtrate acidified gave 1.93 g. crude product indicating the presence of XI. The crude acidic material extracted with ligroine gave 0.5 g. BzOH , m. $121-2^\circ$ (H_2O). Fourth experiment: I (0.0396 mole) in tetrahydrofuran added slowly at -30 to -40° to 4.31 g. II, stirred at this temperature 5 hrs., kept overnight at -70° , carbonated, extracted with Et_2O , then with dilute NaOH , the organic layer dried, distilled, and the oily residue chromatographed on Al_2O_3 gave 0.2 g. Ph_3SiH and 0.25 g. V. Final elution with Me_2CO gave 6.1 g. X. The alkaline aqueous layer acidified and extracted with Et_2O gave some XI and 2.1 g. BzOH . Fifth experiment: I (0.069 mole) in tetrahydrofuran added to 5 g. II, the mixture stirred 48 hrs. at room temperature, hydrolyzed, extracted with Et_2O , and filtered to give 7.1 g. crude IXa and 1.5 g. V. The filtrate layers separated, the organic layer washed, dried, and distilled gave 4.2 g. crude material which was chromatographed to give 1.3 g. V, 2.75 g. Xa; no pure crystalline product was isolated from the 1st ligroine-alc.-filtrate. Acidification of the alkaline aqueous layer caused evolution of H_2S and gave an orange precipitate with FeCl_3 indicative of XI. Refluxing the solution a few min. gave the characteristic odor of thiophenol. I (0.0244 mole) in tetrahydrofuran stirred 2 hrs. at room temperature with 6 g. di-p-tolyl sulfone, the mixture carbonated as usual, H_2O and Et_2O added, 0.2 g. VIII collected, the filtrate layers separated, the organic layer extracted with dilute NaOH , and after removal of the solvent the oily residue chromatographed on Al_2O_3 gave 3.25 g. Ph_3SiH , 0.3 g. di-p-tolyl sulfone, m. $156-8^\circ$, 1.55 g. X, and finally 0.8 g. unidentified compound, decomposed without m. about 370° . Acidification of the alkaline aqueous layer gave a precipitate with FeCl_3 indicative of a sulfinic acid; the solution extracted with Et_2O , the organic layer dried, and distilled gave 0.55 g. p-toluic acid, m. $178-80^\circ$ (H_2O). VIII (0.01 mole) cleaved with excess Na-K in Et_2O gave a Ph_3SiK (XII) suspension. This suspension left 24 hrs. at room temperature with 4.4 g. II in 70 ml. C_6H_6 , the mixture hydrolyzed, filtered, and recrystd. gave 1.3 g. VIII. The organic solution dried and distilled gave 1.2 g. V. I (0.015 mole) in 20 ml. tetrahydrofuran stirred 5 hrs. at room temperature with 5 g. V, then carbonated, treated with H_2O and Et_2O , and separated gave 4.7 g. V. The organic layer gave 4 g. crude X. III in tetrahydrofuran was obtained in 96% yield. III (0.0246 mole) and 0.0246 mole I in tetrahydrofuran stirred 6 hrs. at -30 to -40° , kept overnight at -70° carbonated, H_2O and Et_2O added, and the solvent evaporated gave 2.3 g. crude BzOH . No

H₂O insol. acidic fraction was found. The organic layer gave 0.2 g. V and 0.31 g. mixture of Xa and V. The alc. filtrate gave 3.8 g. X. In a 2nd run using the same amts. of reagents the mixture stirred 1.5 hrs. at room temperature, and then carbonated and separated as above gave 1.6 g. crude BzOH, 0.9 g. V together with 0.55 g. mixed V and Xa, and 3.8 g. X. I (0.036 mole) in tetrahydrofuran added at -50° to 6.2 g. PhSO₂Cl, the mixture warmed to room temperature, and filtered gave 6.2 g. VIII. The filtrate gave 2.65 g. putative mixture of LiCl and VI. The aqueous solution gave an orange precipitate with FeCl₃. The ligroine filtrate gave 0.21 g. Xa. No other crystalline products were isolated from the mother liquors. I (0.018 mole) in tetrahydrofuran was added to 3.72 g. VII; heat was evolved and the color changed to brown; after 10 min. the color test was still strongly pos. and the mixture carbonated gave 2.95 g. VIII. The filtrate layers on separation gave 0.35 g. X and 1.2 g. VII from the organic layer. The aqueous layer on acidification gave the odor of thiophenol showing the previous presence of IX. Et₂O extraction gave 0.32 g. BzOH. When in a 2nd experiment I was allowed to react with VII 5 hrs. at -30°, the workup by carbonation gave only traces of acidic material and traces of VIII. VII and X were recovered in high yields. XII in Et₂O stirred 24 hrs. with 0.02 mole VII, the mixture hydrolyzed, the Et₂O solution dried and evaporated gave a residue indicative of thiophenol. The crude residue yielded 3.5 g. X and 0.2 g. V. Diphenyl sulfoxide (4 g.) in 50 ml. Et₂O stirred 45 min. with a XII suspension in Et₂O, the mixture hydrolyzed, and 0.6 g. VIII collected, the Et₂O solution evaporated and the residue crystallized gave 1.1 g. IXa and 0.9 g. V. Dibenzothiophene under the same conditions was not attacked by I.

IT 18920-16-6, Silane, m-phenylenebis[triphenyl-
(preparation of)
RN 18920-16-6 HCPLUS
CN Silane, 1,3-phenylenebis[triphenyl- (9CI) (CA INDEX NAME)



CC 10E (Organic Chemistry: Benzene Derivatives)
IT 100-56-1, Mercury, phenyl-, chloride 108-98-5, Benzenethiol
618-41-7, Benzenesulfinic acid 789-25-3, Silane, triphenyl-
791-31-1, Silanol, triphenyl- 1048-08-4, Silane, tetraphenyl-
1450-23-3, Disilane, hexaphenyl- 1829-40-9, Disiloxane,
hexaphenyl- 16883-74-2, Benzenesulfinic acid, lithium salt
18738-01-7, Silane, triphenyl(phenylsulfonyl)- 18821-83-5, Benzoic
acid, p-(triphenylsilyl)- 18920-16-6, Silane,
m-phenylenebis[triphenyl-
(preparation of)

=> d 123 1-5 cbib abs hitstr hitind

L23 ANSWER 1 OF 5 HCPLUS COPYRIGHT 2005 ACS on STN
2002:831328 Document No. 138:303947 Ir and Rh complex-catalyzed intramolecular alkyne-alkyne couplings with carbon monoxide and isocyanides. Shibata, Takanori; Yamashita, Koji; Katayama, Emi; Takagi, Kentaro (Faculty of Science, Department of Chemistry, Okayama University, Tsushima, Okayama, 700-8530, Japan). Tetrahedron, 58(43), 8661-8667 (English) 2002. CODEN: TETRAB. ISSN: 0040-4020. OTHER SOURCES: CASREACT 138:303947. Publisher: Elsevier Science Ltd..

AB Intramol. [2+2+1] cycloaddn. of diynes with carbon monoxide was catalyzed by Vaska's complex (IrCl(CO)(PPh₃)₂) or IrCl(cod)(dppp), and cyclopentadienones were obtained in good to high yields. The first catalytic synthesis of iminocyclopentadienes was achieved by

portionwise addns. of isocyanides to a solution of diynes and Rh catalyst ([RhCl(cod)]₂). The carbonylchlorobis(triphenylphosphine) iridium-catalyzed carbonylative coupling of 1,1'-(1,6-heptadiyne-1,7-diyl)bis[benzene] (I) gave 1,1'-(1,6-heptadiyne-1,7-diyl)bis[benzene] in 79% yield. The diμ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene]diiridium-catalyzed coupling of I with 2-isocyano-1,3-dimethylbenzene in di-Bu ether gave N-(5,6-dihydro-1,3-diphenyl-2(4H)-pentalenylidene)-2,6-dimethylbenzenamine (iminocyclopentadiene) in 83% yield.

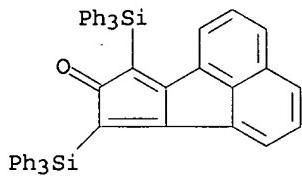
IT 340180-13-4P, 7,9-Bis(triphenylsilyl)-8H-

Cyclopent[a]acenaphthylen-8-one

RL: SPN (Synthetic preparation); PREP (Preparation)
(iridium and rhodium complex-catalyzed intramol. alkyne-alkyne couplings with carbon monoxide and isocyanides)

RN 340180-13-4 HCAPLUS

CN 8H-Cyclopent[a]acenaphthylen-8-one, 7,9-bis(triphenylsilyl)- (9CI)
(CA INDEX NAME)



CC 24-4 (Alicyclic Compounds)

Section cross-reference(s): 25

IT 121573-71-5P, N-(5,6-Dihydro-1,3-diphenyl-2(4H)-pentalenylidene)-2,6-dimethylbenzenamine 154353-74-9P, 3,5-Dihydro-5-oxo-4,6-diphenyl-2,2(1H)-Pentalenedicarboxylic acid diethyl ester 340180-12-3P, 4,6-Bis(triphenylsilyl)-1H-Cyclopenta[c]furan-5(3H)-one

340180-13-4P, 7,9-Bis(triphenylsilyl)-8H-

Cyclopent[a]acenaphthylen-8-one 340180-16-7P, 3,5-Dihydro-5-oxo-4,6-diphenyl-2,2(1H)-Pentalenedicarboxylic acid bis(1,1-dimethylethyl) ester 340180-17-8P 340180-18-9P,

4,6-Bis(4-chlorophenyl)-3,5-dihydro-5-oxo-2,2(1H)-Pentalenedicarboxylic acid bis(phenylmethyl) ester 340180-20-3P

340180-21-4P, 5,6-Dihydro-1,3-diphenyl-2(4H)-Pentalenone

340180-22-5P, 4,6-Diphenyl-1H-Cyclopenta[c]furan-5(3H)-one

340180-23-6P, 4,5-Dihydro-5-oxo-4,6-diphenyl-2,2(1H)-

Pentalenedicarboxylic acid bis(phenylmethyl) ester 340180-24-7P

340180-25-8P 340180-26-9P 507990-03-6P 507990-08-1P

507990-17-2P 507990-24-1P 507990-29-6P 507990-40-1P

507990-53-6P, N-(5,6-Dihydro-1,3-diphenyl-2(4H)-pentalenylidene)-4-methoxybenzenamine 508020-95-9P

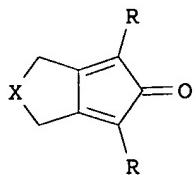
RL: SPN (Synthetic preparation); PREP (Preparation)

(iridium and rhodium complex-catalyzed intramol. alkyne-alkyne couplings with carbon monoxide and isocyanides)

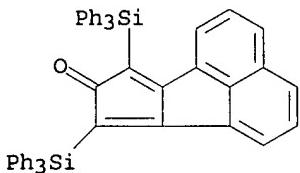
L23 ANSWER 2 OF 5 HCAPLUS COPYRIGHT 2005 ACS on STN

2001:187908 Document No. 134:366615. Iridium Complex Catalyzed Carbonylative Alkyne-Alkyne Coupling for the Synthesis of Cyclopentadienones. Shibata, Takanori; Yamashita, Koji; Ishida, Hiroyuki; Takagi, Kentaro (Department of Chemistry Faculty of Science, Okayama University, Tsushima Okayama, 700-8530, Japan). Organic Letters, 3(8), 1217-1219 (English) 2001. CODEN: ORLEF7. ISSN: 1523-7060. OTHER SOURCES: CASREACT 134:366615. Publisher: American Chemical Society.

GI



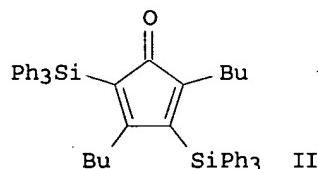
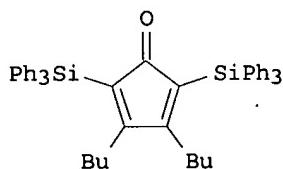
- AB Fused cyclopentadienones I [X = O, H₂C, (EtO₂C)₂C, (PhCH₂O₂C)₂C; R = Ph₃Si, Ph, 4-MeOC₆H₄, 4-ClC₆H₄, 4-MeO₂CC₆H₄] are prepared in 52-99% yields by catalytic carbonylative alkyne-alkyne coupling of the bisalkynes RC.tplbond.CCH₂XCH₂C.tplbond.CR II using iridium diphosphine complexes under carbon monoxide at atmospheric pressure or a partial pressure of 0.2 atmospheric. Either Ir(1,5-COD)(Ph₂PCH₂CH₂CH₂PPh₂)Cl₂ or Ir(1,5-COD)(Ph₃P)₂Cl₂ (Vaska's complex) are optimal catalysts for this process. E.g., stirring II [R = Ph; X = (PhCH₂O₂C)₂C] in xylene under 1 atmospheric CO pressure at 120° in the presence of Vaska's complex for 2-7 h gives I [R = Ph; X = (PhCH₂O₂C)₂C] in 99% yield. The crystal structure of the chloroform solvate of the iridium biphosphine Ir(1,5-COD)(Ph₂PCH₂CH₂CH₂PPh₂)Cl₂ [Ir(COD)(dppp)Cl•CHCl₃] was determined
- IT 340180-13-4P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of fused cyclopentadienones by cyclocarbonylation of bisalkynes under a carbon monoxide atmospheric in the presence of iridium diphosphine catalysts)
- RN 340180-13-4 HCAPLUS
- CN 8H-Cyclopent[a]acenaphthylen-8-one, 7,9-bis(triphenylsilyl)- (9CI)
 (CA INDEX NAME)



- CC 24-7 (Alicyclic Compounds)
 Section cross-reference(s): 27, 29, 75
- IT 154353-74-9P 340180-12-3P 340180-13-4P 340180-15-6P
 340180-16-7P 340180-17-8P 340180-18-9P 340180-20-3P
 340180-21-4P 340180-22-5P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of fused cyclopentadienones by cyclocarbonylation of bisalkynes under a carbon monoxide atmospheric in the presence of iridium diphosphine catalysts)

L23 ANSWER 3 OF 5 HCAPLUS COPYRIGHT 2005 ACS on STN
 2000:803531 Document No. 134:147326 Inter- and intramolecular carbonylative alkyne-alkyne coupling reaction mediated by cobalt carbonyl complex. Shibata, T.; Yamashita, K.; Takagi, K.; Ohta, T.; Soai, K. (Department of Chemistry, Faculty of Science, Okayama University, Tsushima, Okayama, 700-8530, Japan). Tetrahedron, 56(47), 9259-9267 (English) 2000. CODEN: TETRAB. ISSN: 0040-4020.
 OTHER SOURCES: CASREACT 134:147326. Publisher: Elsevier Science Ltd..

GI



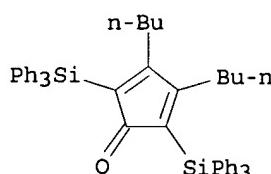
AB Inter- and intramol. carbonylative coupling reactions between alkynes possessing diphenylallylsilyl groups mediated by dicobalt carbonyl complexes under argon atmospheric gave mono- and bicyclic cyclopentadienones in high yields. Thus, reaction of BuC₂tplbond.CSiPh₃ (I) and the hexacarbonyldicobalt complex of I in toluene at 120° gave 77% of a 3.5:1 mixture of cyclopentadienones II and III.

IT 212125-17-2P 212125-18-3P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of disilylcyclopentadienones via intermol. and intramol. cycloaddn./coupling reactions of silyl alkynes and hexacarbonyl(silyl alkyne)dicobalt complexes)

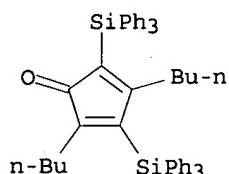
RN 212125-17-2 HCPLUS

CN 2,4-Cyclopentadien-1-one, 3,4-dibutyl-2,5-bis(triphenylsilyl)- (9CI)
(CA INDEX NAME)



RN 212125-18-3 HCPLUS

CN 2,4-Cyclopentadien-1-one, 2,4-dibutyl-3,5-bis(triphenylsilyl)- (9CI)
(CA INDEX NAME)



CC 24-4 (Alicyclic Compounds)

Section cross-reference(s): 29

IT 212125-14-9P 212125-15-0P 212125-16-1P 212125-17-2P

212125-18-3P 212125-19-4P 212125-20-7P 212125-21-8P

212125-25-2P 212125-26-3P 212125-32-1P 212125-33-2P

212125-34-3P 212125-36-5P 324000-49-9P 324000-60-4P

324000-61-5P 324000-62-6P 324000-63-7P 324000-64-8P

324000-65-9P 324000-67-1P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of disilylcyclopentadienones via intermol. and intramol. cycloaddn./coupling reactions of silyl alkynes and hexacarbonyl(silyl alkyne)dicobalt complexes)

L23 ANSWER 4 OF 5 HCPLUS COPYRIGHT 2005 ACS on STN
1998:495679 Document No. 129:202694 Direct synthesis of

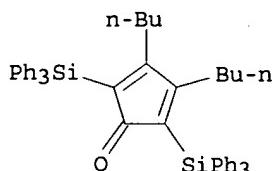
cyclopentadienones by cobalt carbonyl-mediated carbonylative alkyne-alkyne coupling reaction. Shibata, Takanori; Ohta, Toshihiro; Soai, Kenso (Department of Applied Chemistry, Faculty of Science, Science University of Tokyo, Tokyo, 162-8601, Japan). Tetrahedron Letters, 39(32), 5785-5788 (English) 1998. CODEN: TELEAY. ISSN: 0040-4039. Publisher: Elsevier Science Ltd..

AB Dicobalt carbonyl complex mediates an intermol. carbonylative coupling reaction between alkynylsilanes. The reaction proceeds under atmospheric pressure of argon and directly provides free cyclopentadienones in high yields (up to 99%).

IT 212125-17-2P 212125-18-3P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

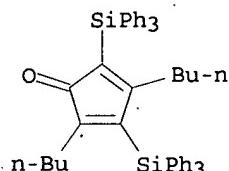
RN 212125-17-2 HCPLUS

CN 2,4-Cyclopentadien-1-one, 3,4-dibutyl-2,5-bis(triphenylsilyl)- (9CI)
(CA INDEX NAME)



RN 212125-18-3 HCPLUS

CN 2,4-Cyclopentadien-1-one, 2,4-dibutyl-3,5-bis(triphenylsilyl)- (9CI)
(CA INDEX NAME)



CC 24-4 (Alicyclic Compounds)

Section cross-reference(s): 29

IT 212125-14-9P 212125-15-0P 212125-16-1P 212125-17-2P
212125-18-3P 212125-19-4P 212125-20-7P 212125-21-8P
212125-22-9P 212125-23-0P 212125-24-1P 212125-25-2P
212125-26-3P 212125-32-1P 212125-33-2P 212125-34-3P
212125-35-4P 212125-36-5P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

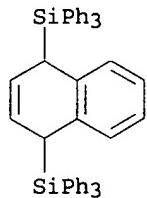
L23 ANSWER 5 OF 5 HCPLUS COPYRIGHT 2005 ACS on STN

1971:100162 Document No. 74:100162 Reaction of triphenylsilyl halides with sodium naphthalenide. Young, John Colin; Fearon, F. W. G. (Edward Davies Chem. Lab., Univ. Coll. Wales, Aberystwyth, UK). Journal of the Chemical Society [Section] B: Physical Organic (2), 272-6 (English) 1971. CODEN: JCSPAC. ISSN: 0045-6470.

AB Ph₃SiCl and Ph₃SiF reacted with Na naphthalenide to give 50-90% (Ph₃Si)₂, 1.6-90% 1,4-bis(triphenylsilyl)-1,4-dihydronaphthalene (I), and other products. The yield of I was increased in the presence of excess free naphthalene. The initial step may involve an electron transfer mechanism to produce a triphenylsilyl radical. I was also obtained from the reaction of naphthalene and Ph₃SiH in the presence of tert-Bu₂O₂.

IT 31027-64-2P
RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation of)
RN 31027-64-2 HCPLUS
CN Silane, (1,4-dihydro-1,4-naphthylene)bis[triphenyl- (8CI) (CA INDEX
NAME)



CC 29 (Organometallic and Organometalloidal Compounds)
IT 31027-64-2P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

>